



02/27/13

## Technical Report for

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### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW01-Well

Accutest Job Number: TC25603

Sampling Date: 02/15/13

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### Report to:

EarthCon Consultants  
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Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

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Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC25603

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter / WW01-Wel

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
TC25603-1	02/15/13	08:20	02/19/13	AQ	Water	WW01-WEL-021513



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25603

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/27/2013 11:39:49 AM

1 Sample was collected on 02/15/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.2 Deg C. The sample received an Accutest job number of TC25603. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> VE969
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

<b>Matrix</b> AQ	<b>Batch ID:</b> GSS261
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- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-1DUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

## Summary of Hits

Page 1 of 1

Job Number: TC25603  
Account: EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas  
Collected: 02/15/13

Lab Sample ID	Client Sample ID	Result/ Qual	ML	SDL	Units	Method
TC25603-1	WW01-WEL-021513					
Methane		1.32	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.101	0.0010	0.00050	mg/l	RSKSOP-147/175

Sample Results

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Report of Analysis

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## Report of Analysis

Client Sample ID:	WW01-WEL-021513	Date Sampled:	02/15/13
Lab Sample ID:	TC25603-1	Date Received:	02/19/13
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021157.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		72-122%
17060-07-0	1,2-Dichloroethane-D4	113%		68-124%
2037-26-5	Toluene-D8	109%		80-119%
460-00-4	4-Bromofluorobenzene	107%		72-126%

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

Page 1 of 1

Client Sample ID: WW01-WEL-021513			
Lab Sample ID: TC25603-1		Date Sampled: 02/15/13	
Matrix: AQ - Water		Date Received: 02/19/13	
Method: RSKSOP-147/175		Percent Solids: n/a	
Project: Quarterly Well Sampling, Parker County, Texas			

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005701.D	1	02/25/13	LT	n/a	n/a	GSS261
Run #2	SS005702.D	10	02/25/13	LT	n/a	n/a	GSS261

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	1.32 <sup>a</sup>	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.101	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form

10165 Harwin Dr, Ste 150 Houston, TX 77036  
TEL: 713-271-4700 FAX: 713-271-4770  
[www.acctest.com](http://www.acctest.com)

FEDEX Tracking # Accident Date #		Bottle Order Control # Accident Job #	
Requested Analyses BTEX 0260B Butane, Ethane, Ethane, Isobutane, Methane, Propane by RSK-176		Matrix Codes DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank	
LAB USE ONLY			
Comments / Special Instructions Packed in (2) Coolers			
Date Time: 7/19/93		Received By: [Signature]	
Date Time:		Received By:	
Intact Not Intact	Preserved when applicable <input type="checkbox"/>	On Ice <input type="checkbox"/>	Cooler Temp.

5.1

**TC25603: Chain of Custody**  
**Page 1 of 3**

Accutest Job Number:	TC25603	Client:	EARTHCON	Project:	4TH QTR SAMPLING
Date / Time Received:	2/19/2013	Delivery Method:	FedEx	Airbill #'s:	800894129249
No. Coolers:	1	Therm ID:	IR6	Temp Adjustment Factor:	-0.1
Cooler Temps (Initial/Adjusted):	#1: (3.3/3.2)				

<b><u>Cooler Security</u></b>				<b><u>Y or N</u></b>		<b><u>Y or N</u></b>				<b><u>Sample Integrity - Documentation</u></b>				<b><u>Y or N</u></b>	
1. Custody Seals Present:		<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:		<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. Sample labels present on bottles:		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. Container labeling complete:		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:		<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK		<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. Sample container label / COC agree:		<input checked="" type="checkbox"/>	<input type="checkbox"/>				
<b><u>Cooler Temperature</u></b>				<b><u>Y or N</u></b>		<b><u>Sample Integrity - Condition</u></b>				<b><u>Y or N</u></b>					
1. Temp criteria achieved:		<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. Sample recvd within HT:		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. All containers accounted for:		<input checked="" type="checkbox"/>	<input type="checkbox"/>				
2. Cooler temp verification:				3. Condition of sample:				Intact							
3. Cooler media:		Ice (Bag)													
<b><u>Quality Control Preservation</u></b>				<b><u>Y or N</u></b>		<b><u>N/A</u></b>		<b><u>Sample Integrity - Instructions</u></b>				<b><u>Y or N</u></b>		<b><u>N/A</u></b>	
1. Trip Blank present / cooler:		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. Analysis requested is clear:		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. Bottles received for unspecified tests		<input type="checkbox"/>	<input checked="" type="checkbox"/>			
2. Trip Blank listed on COC:		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. Sufficient volume recvd for analysis:		<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Compositing instructions clear:		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
3. Samples preserved properly:		<input checked="" type="checkbox"/>	<input type="checkbox"/>		5. Filtering instructions clear:		<input type="checkbox"/>	<input type="checkbox"/>							
4. VOCs headspace free:		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											

Comments	The trip blank is listed on a separate chain-of-custody.
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**TC25603: Chain of Custody**  
**Page 2 of 3**

## Sample Receipt Log

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Job #: TC25603

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25603-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25603-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25603-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25603-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25603-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25603-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2

 5.1  
5

**TC25603: Chain of Custody**  
**Page 3 of 3**

## Appendix A Laboratory Data Package Cover Page

TC25603 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.


The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

### QA Manager

Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez		Laboratory Director	2/27/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		2/27/2013			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC25603			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS261, VE969			
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION				YES	NO	NA <sup>3</sup>	NR <sup>4</sup>   ER # <sup>5</sup>
R1	OI	<b>CHAIN-OF-CUSTODY (C-O-C):</b>							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	<b>Sample and quality control (QC) identification</b>							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	<b>Test reports</b>							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	<b>Surrogate recovery data</b>							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	<b>Test reports/summary forms for blank samples</b>							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	<b>Laboratory control samples (LCS):</b>							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?					X		4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	<b>Analytical duplicate data</b>							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	<b>Method quantitation limits (MQLs):</b>							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?					X		2
R10	OI	<b>Other problems/anomalies</b>							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/27/2013	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25603	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS261, VE969	
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION	YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
S1	OI	<b>Initial calibration (ICAL)</b>				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	<b>Initial and continuing calibration verification (ICCV AND CCV) and continuing</b>				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	<b>Mass spectral tuning</b>				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	<b>Internal standards (IS)</b>				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	<b>Raw data (NELAC Section 5.5.10)</b>				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	<b>Dual column confirmation</b>				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	<b>Tentatively identified compounds (TICs):</b>				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	<b>Interference Check Sample (ICS) results</b>				
		Were percent recoveries within method QC limits?			X	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	<b>Method detection limit (MDL) studies</b>				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	<b>Proficiency test reports</b>				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	<b>Standards documentation</b>				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	<b>Compound/analyte identification procedures</b>				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	<b>Demonstration of analyst competency (DOC)</b>				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	<b>Verification/validation documentation for methods (NELAC Chapter 5)</b>				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	<b>Laboratory standard operating procedures (SOPs)</b>				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			GSS261, VE969
ER# <sup>1</sup>	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

5  
2  
5

## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25603

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25603-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	109% 72-122%
17060-07-0	1,2-Dichloroethane-D4	111% 68-124%
2037-26-5	Toluene-D8	104% 80-119%
460-00-4	4-Bromofluorobenzene	104% 72-126%

## Blank Spike Summary

Page 1 of 1

Job Number: TC25603

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25603-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25603

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25603-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.

GC Volatiles

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QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

7

## Method Blank Summary

Page 1 of 1

Job Number: TC25603

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25603-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1



## Blank Spike Summary

Page 1 of 1

Job Number: TC25603

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25603-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128

\* = Outside of Control Limits.

## Matrix Spike Summary

Page 1 of 1

Job Number: TC25603

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25603-1

CAS No.	Compound	TC25606-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	1490 <sup>b</sup>	21.5	1520	249* <sup>a</sup>	68-139
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145
74-84-0	Ethane	104	43.3	137	75	68-131
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131
75-28-5	Isobutane	1.5 U	72.5	52.8	73	72-131
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

Job Number: TC25603

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25603-1

CAS No.	Compound	TC25599-1		DUP		RPD	Limits
		ug/l	Q	ug/l	Q		
74-82-8	Methane	5.72		8.04		34	53
74-85-1	Ethene	1.0 U		ND		nc	27
74-84-0	Ethane	1.0 U		ND		nc	43
74-98-6	Propane	1.5 U		ND		nc	21
75-28-5	Isobutane	1.5 U		ND		nc	35
106-97-8	Butane	1.5 U		ND		nc	33

\* = Outside of Control Limits.

Lab #: 336576 Job #: 20733  
 Sample Name/Number: WW01-WEL-021513  
 Company: Oil Tracers, LLC  
 Date Sampled: 2/15/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: Fourth Quarter Well Sampling  
 Location: Parker County, TX  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.39			
Oxygen -----	0.12			
Nitrogen -----	76.20			
Carbon Dioxide -----	0.30			
Methane -----	21.31	-46.44	-180.9	
Ethane -----	0.681	-21.2		
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	0.0003			
N-pentane -----	nd			
Hexanes + -----	nd			

## Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.70

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/27/13

## Technical Report for

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### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW02-Per

Accutest Job Number: TC25605

Sampling Date: 02/18/13

---

### Report to:

EarthCon Consultants  
4800 Sugar Grove Suite 420  
Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

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Test results relate only to samples analyzed.

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## Sample Summary

EarthCon Consultants

Job No: TC25605

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter / WW02-Per

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC25605-1	02/18/13	09:58	02/19/13	AQ Water	WW02-PER-021813



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25605

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/27/2013 11:44:38 AM

1 Sample was collected on 02/18/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.2 Deg C. The sample received an Accutest job number of TC25605. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> VE969
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-IMS, TC25596-IMSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

<b>Matrix</b> AQ	<b>Batch ID:</b> GSS261
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-1DUP, TC25606-IMS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

## Summary of Hits

Page 1 of 1

Job Number: TC25605  
Account: EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas  
Collected: 02/18/13



Lab Sample ID	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25605-1	WW02-PER-021813					
Benzene		0.00078 J	0.0010	0.00034	mg/l	SW846 8260B
Methane		8.80	0.050	0.030	mg/l	RSKSOP-147/175
Ethane		1.74	0.10	0.050	mg/l	RSKSOP-147/175
Propane		0.0242	0.0015	0.00075	mg/l	RSKSOP-147/175
Isobutane		0.00398	0.0015	0.00075	mg/l	RSKSOP-147/175
Butane		0.0031	0.0015	0.00075	mg/l	RSKSOP-147/175

Sample Results

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Report of Analysis

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## Report of Analysis

Page 1 of 1

Client Sample ID:	WW02-PER-021813	Date Sampled:	02/18/13
Lab Sample ID:	TC25605-1	Date Received:	02/19/13
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Quarterly Well Sampling, Parker County, Texas		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021159.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00078	0.0010	0.00034	mg/l	J
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		72-122%
17060-07-0	1,2-Dichloroethane-D4	112%		68-124%
2037-26-5	Toluene-D8	106%		80-119%
460-00-4	4-Bromofluorobenzene	105%		72-126%

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	WW02-PER-021813	Date Sampled:	02/18/13
Lab Sample ID:	TC25605-1	Date Received:	02/19/13
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	RSKSOP-147/175		
Project:	Quarterly Well Sampling, Parker County, Texas		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005705.D	1	02/25/13	LT	n/a	n/a	GSS261
Run #2	SS005706.D	100	02/25/13	LT	n/a	n/a	GSS261

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	8.80 <sup>a</sup>	0.050	0.030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	1.74 <sup>a</sup>	0.10	0.050	mg/l	
74-98-6	Propane	0.0242	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00398	0.0015	0.00075	mg/l	
106-97-8	Butane	0.0031	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Misc. Forms

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5

## Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form

10165 Harwin Dr, Ste 150 Houston, TX 77036  
TEL: 713-271-4700 FAX: 713-271-4770  
[www.aacustest.com](http://www.aacustest.com)

[illegible]

**TC25605: Chain of Custody**  
**Page 1 of 3**

Accutest Job Number: TC25605      Client: EARTHCON      Project: 4TH QTR SAMPLING  
 Date / Time Received: 2/19/2013      Delivery Method: FedEx      Airbill #s: 800894129249  
 No. Coolers: 1      Therm ID: IR6      Temp Adjustment Factor: -0.1  
 Cooler Temps (Initial/Adjusted): #1: (3.3/3.2)

**Cooler Security**

Y or N

 1. Custody Seals Present: ☒ ☐

3. COC Present:

Y or N

☒ ☐

 2. Custody Seals Intact: ☒ ☐

4. Smpl Dates/Time OK

☒ ☐
**Cooler Temperature**

Y or N

 1. Temp criteria achieved: ☒ ☐

2. Cooler temp verification:

 3. Cooler media: Ice (Bag)
**Quality Control Preservation**

Y or N

N/A

WTB STB

 1. Trip Blank present / cooler: ☒ ☐ ☐

 2. Trip Blank listed on COC: ☐ ☒ ☐

 3. Samples preserved properly: ☒ ☐ ☐

 4. VOCs headspace free: ☒ ☐ ☐
**Sample Integrity - Documentation**

Y or N

 1. Sample labels present on bottles: ☒ ☐

 2. Container labeling complete: ☒ ☐

 3. Sample container label / COC agree: ☒ ☐
**Sample Integrity - Condition**

Y or N

 1. Sample recvd within HT: ☒ ☐

 2. All containers accounted for: ☒ ☐

3. Condition of sample:

Intact

**Sample Integrity - Instructions**

Y or N

N/A

 1. Analysis requested is clear: ☒ ☐

 2. Bottles received for unspecified tests: ☐ ☒

 3. Sufficient volume recvd for analysis: ☒ ☐

 4. Compositing instructions clear: ☐ ☐ ☒

 5. Filtering instructions clear: ☐ ☐ ☒

Comments The trip blank is listed on a separate chain-of-custody.

 5.1  
5

**TC25605: Chain of Custody**  
**Page 2 of 3**

# Sample Receipt Log

Page 2 of 2

Job #: TC25605

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25605-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25605-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25605-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25605-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25605-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25605-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2

5.1  
5

**TC25605: Chain of Custody**  
**Page 3 of 3**

# Appendix A Laboratory Data Package Cover Page

TC25605 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
  - ☐ R2 Sample identification cross-reference;
  - ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
    - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
    - b) dilution factors,
    - c) preparation methods,
    - d) cleanup methods, and
    - e) if required for the project, tentatively identified compounds (TICs).
  - ☐ R4 Surrogate recovery data including:
    - a) Calculated recovery (%R), and
    - b) The laboratory's surrogate QC limits.
  - ☐ R5 Test reports/summary forms for blank samples;
  - ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
    - a) LCS spiking amounts,
    - b) Calculated %R for each analyte, and
    - c) The laboratory's LCS QC limits.
  - ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
    - a) Samples associated with the MS/MSD clearly identified,
    - b) MS/MSD spiking amounts,
    - c) Concentration of each MS/MSD analyte measured in the parent and
    - d) Calculated %Rs and relative percent differences (RPDs), and
    - e) The laboratory's MS/MSD QC limits
  - ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
    - a) The amount of analyte measured in the duplicate,
    - b) The calculated RPD, and
    - c) The laboratory's QC limits for analytical duplicates.
  - ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
  - ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

**Check, if applicable:** This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ [ ] \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

**QA Manager**

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

2/27/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		2/27/2013			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC25605			
Reviewer #	Name:	Anita Patel		Prep Batch Number(s):		GSS261, VE969			
	A <sup>2</sup>	DESCRIPTION		YES	NO	NA <sup>2</sup>	NR <sup>2</sup>	ER # <sup>2</sup>	
R1	OI	<b>CHAIN-OF-CUSTODY (C-O-C):</b>							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?		X					
		Were all departures from standard conditions described in an exception report?		X					
R2	OI	<b>Sample and quality control (QC) identification</b>							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?		X					
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?		X					
R3	OI	<b>Test reports</b>							
		Were samples prepared and analyzed within holding times?		X					
		Other than those results <MQL, were all other raw values bracketed by calibration standards?		X					
		Were calculations checked by a peer or supervisor?		X					
		Were all analyte identifications checked by a peer or supervisor?		X					
		Were sample detection limits reported for all analytes not detected?		X					
		Were all results for soil and sediment samples reported on a dry weight basis?				X			
		Were % moisture (or solids) reported for all soil and sediment samples?				X			
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?				X			
		If required for the project, are TIC's reported?				X			
R4	O	<b>Surrogate recovery data</b>							
		Were surrogates added prior to extraction?		X					
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X					
R5	OI	<b>Test reports/summary forms for blank samples</b>							
		Were appropriate type(s) of blanks analyzed?		X					
		Were blanks analyzed at the appropriate frequency?		X					
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?		X					
		Were blank concentrations <MQL?		X					
R6	OI	<b>Laboratory control samples (LCS):</b>							
		Were all COCs included in the LCS?		X					
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?		X					
		Were LCSs analyzed at required frequency?		X					
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		X					
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?		X					5
		Was the LCSD RPD within QC limits?				X			
R7	OI	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>							
		Were the project/method specified analytes included in the MS and MSD?		X					
		Were MS/MSD analyzed at the appropriate frequency?		X					
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?			X				4
		Were the MS/MSD RPDs within laboratory QC limits?		X					
R8	OI	<b>Analytical duplicate data</b>							
		Were appropriate analytical duplicates analyzed for each matrix?		X					
		Were analytical duplicates analyzed at the appropriate frequency?		X					
		Were RPDs or relative standard deviations within the laboratory QC limits?		X					
R9	OI	<b>Method quantitation limits (MQLs):</b>							
		Are the MQLs for each method analyte included in the laboratory data package?		X					
		Do the MQLs correspond to the concentration of the lowest non-zero calibration		X					
		Are unadjusted MQLs and DCSS included in the laboratory data package?			X				2
R10	OI	<b>Other problems/anomalies</b>							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?		X					
		Was applicable and available technology used to lower the SDL to minimize the		X					
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?		X					3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/27/2013				
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25605				
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS261, VE969				
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION	YES	NO	NA <sup>3</sup>	NR <sup>4</sup>	ER # <sup>5</sup>		
S1	OI	<b>Initial calibration (ICAL)</b>							
		Were response factors and/or relative response factors for each analyte within QC limits?	X						
		Were percent RSDs or correlation coefficient criteria met?	X						
		Was the number of standards recommended in the method used for all analytes?	X						
		Were all points generated between the lowest and highest standard used to calculate the curve?	X						
		Are ICAL data available for all instruments used?	X						
		Has the initial calibration curve been verified using an appropriate second source standard?	X						
S2	OI	<b>Initial and continuing calibration verification (ICCV AND CCV) and continuing</b>							
		Was the CCV analyzed at the method-required frequency?	X						
		Were percent differences for each analyte within the method-required QC limits?	X						
		Was the ICAL curve verified for each analyte?	X						
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X				
S3	O	<b>Mass spectral tuning</b>							
		Was the appropriate compound for the method used for tuning?	X						
		Were ion abundance data within the method-required QC limits?	X						
S4	O	<b>Internal standards (IS)</b>							
		Were IS area counts and retention times within the method-required QC limits?	X						
S5	OI	<b>Raw data (NELAC Section 5.5.10)</b>							
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X						
		Were data associated with manual integrations flagged on the raw data?	X						
S6	O	<b>Dual column confirmation</b>							
		Did dual column confirmation results meet the method-required QC?			X				
S7	O	<b>Tentatively identified compounds (TICs):</b>							
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X				
S8	I	<b>Interference Check Sample (ICS) results</b>							
		Were percent recoveries within method QC limits?			X				
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>							
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X				
S10	OI	<b>Method detection limit (MDL) studies</b>							
		Was a MDL study performed for each reported analyte?	X						
		Is the MDL either adjusted or supported by the analysis of DCSs?	X					5	
S11	OI	<b>Proficiency test reports</b>							
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X						
S12	OI	<b>Standards documentation</b>							
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X						
S13	OI	<b>Compound/analyte identification procedures</b>							
		Are the procedures for compound/analyte identification documented?	X						
S14	OI	<b>Demonstration of analyst competency (DOC)</b>							
		Was DOC conducted consistent with NELAC Chapter 5?	X						
		Is documentation of the analyst's competency up-to-date and on file?	X						
S15	OI	<b>Verification/validation documentation for methods (NELAC Chapter 5)</b>							
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X						
S16	OI	<b>Laboratory standard operating procedures (SOPs)</b>							
		Are laboratory SOPs current and on file for each method performed?	X						

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			GSS261, VE969
ER# <sup>1</sup>	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

5.2  
5

## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



## Method Blank Summary

Page 1 of 1

Job Number: TC25605

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25605-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	109% 72-122%
17060-07-0	1,2-Dichloroethane-D4	111% 68-124%
2037-26-5	Toluene-D8	104% 80-119%
460-00-4	4-Bromofluorobenzene	104% 72-126%

6.1.1

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## Blank Spike Summary

Page 1 of 1

Job Number: TC25605

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25605-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25605  
Account: PESTXST EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25605-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.

## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25605

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25605-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1



## Blank Spike Summary

Page 1 of 1

Job Number: TC25605

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25605-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128

\* = Outside of Control Limits.

## Matrix Spike Summary

Page 1 of 1

Job Number: TC25605

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25605-1

CAS No.	Compound	TC25606-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	1490 <sup>b</sup>	21.5	1520	249* <sup>a</sup>	68-139
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145
74-84-0	Ethane	104	43.3	137	75	68-131
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131
75-28-5	Isobutane	1.5 U	72.5	52.8	73	72-131
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

Job Number: TC25605

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25605-1

CAS No.	Compound	TC25599-1		DUP		RPD	Limits
		ug/l	Q	ug/l	Q		
74-82-8	Methane	5.72		8.04		34	53
74-85-1	Ethene	1.0 U		ND		nc	27
74-84-0	Ethane	1.0 U		ND		nc	43
74-98-6	Propane	1.5 U		ND		nc	21
75-28-5	Isobutane	1.5 U		ND		nc	35
106-97-8	Butane	1.5 U		ND		nc	33

\* = Outside of Control Limits.

Lab #: 336589 Job #: 20733  
 Sample Name/Number: WW02-PER-021813  
 Company: Oil Tracers, LLC  
 Date Sampled: 2/18/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: Fourth Quarter Well Sampling  
 Location: Parker County, TX  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	0.237			
Oxygen -----	0.048			
Nitrogen -----	10.21			
Carbon Dioxide -----	0.13			
Methane -----	82.91	-51.19	-194.6	
Ethane -----	6.37	-32.97		
Ethylene -----	nd			
Propane -----	0.0664	-25.6		
Propylene -----	nd			
Iso-butane -----	0.0111			
N-butane -----	0.0075			
Iso-pentane -----	0.0032			
N-pentane -----	0.0015			
Hexanes + -----	0.0043			

**Remarks:**

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.52

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Propane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/27/13

## Technical Report for

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### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW06-Tho

Accutest Job Number: TC25608

Sampling Date: 02/15/13

---

### Report to:

EarthCon Consultants  
4800 Sugar Grove Suite 420  
Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

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Test results relate only to samples analyzed.

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## Sample Summary

EarthCon Consultants

Job No: TC25608

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter / WW06-Tho

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC25608-1	02/15/13	14:35	02/19/13	AQ Water	WW06-THO-021513



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25608

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/27/2013 11:53:02 AM

1 Sample was collected on 02/15/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.2 Deg C. The sample received an Accutest job number of TC25608. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

Matrix	AQ	Batch ID:	VE969
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- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

Matrix	AQ	Batch ID:	GSS262
--------	----	-----------	--------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25609-1DUP, TC25610-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane, Ethane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

## Summary of Hits

Page 1 of 1

Job Number: TC25608  
Account: EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas  
Collected: 02/15/13



Lab Sample ID	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25608-1	WW06-THO-021513					
Methane		0.391	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.00954	0.0010	0.00050	mg/l	RSKSOP-147/175

Sample Results

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Report of Analysis

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## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	WW06-THO-021513	<b>Date Sampled:</b>	02/15/13
<b>Lab Sample ID:</b>	TC25608-1	<b>Date Received:</b>	02/19/13
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021162.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		72-122%
17060-07-0	1,2-Dichloroethane-D4	114%		68-124%
2037-26-5	Toluene-D8	107%		80-119%
460-00-4	4-Bromofluorobenzene	107%		72-126%

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b> WW06-THO-021513	<b>Date Sampled:</b> 02/15/13
<b>Lab Sample ID:</b> TC25608-1	<b>Date Received:</b> 02/19/13
<b>Matrix:</b> AQ - Water	<b>Percent Solids:</b> n/a
<b>Method:</b> RSKSOP-147/175	
<b>Project:</b> Quarterly Well Sampling, Parker County, Texas	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005722.D	1	02/26/13	LT	n/a	n/a	GSS262
Run #2	SS005723.D	10	02/26/13	LT	n/a	n/a	GSS262

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.391 <sup>a</sup>	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.00954	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form

10165 Harwin Dr, Ste 150 Houston, TX 77036  
TEL: 713-271-4700 FAX: 713-271-4770  
[www.acutest.com](http://www.acutest.com)

FED-EX Tracking #	Bottle Order Control #
Accountant Quote #	Accountant Job # TC25608

Client / Reporting Information				Project Information														Requested Analyses														Matrix Codes																											
<b>Company Name</b> EarthCon Consultants, Inc. <b>Street Address</b> 4800 Sugar Grove Blvd., Suite 390 City: <b>Stafford</b> State: <b>TX</b> Zip: <b>77477</b> <b>Project Contact</b> E-mail: <b>Gabriela.Flores@earthcon.com</b> Phone #: <b>281-201-3513</b> Fax #: <b>281-201-3513</b> <b>Sampler(s) Name(s)</b> <b>J.B./SK/RM</b>				<b>Project Name:</b> Fourth Quarterly Well Sampling, Parker County, Texas <b>Street</b> <b>City</b> State <b>State</b> Zip <b>Zip</b> <b>Billing Information (if different from Report to)</b> <b>Company Name</b> <b>Street Address</b> <b>City</b> State <b>State</b> Zip <b>Zip</b> <b>Client Purchase Order #</b> <b>Project Manager</b> <b>Attention:</b>														<b>Requested Analyses</b> DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank														<b>Matrix Codes</b>																											
<b>Field ID / Point of Collection</b> W206-THO-021513				<b>Collection</b> Date: 2/15/13 Time: 1435														<b>Number of preserved bottles</b> Matrix: DW G X														<b>Matrix Codes</b> LAB USE ONLY																											
				<b>Collection</b> Date: 2/15/13 Time: 1435														<b>Number of preserved bottles</b> Matrix: DW G X														<b>Matrix Codes</b> LAB USE ONLY																											
<b>Turnaround Time (Business days)</b> Standard <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 4 Day RUSH <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day EMERGENCY Emergency & Rush (A) date available via LabLink				<b>Approved By (Account PM) / Date:</b>     														<b>Data Deliverable Information</b> <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLY (Level 3+4) <input type="checkbox"/> REDT1 (Level 3+4) <input type="checkbox"/> Commercial "C" <input checked="" type="checkbox"/> TRRP <input type="checkbox"/> EDD Format <input type="checkbox"/> Other														<b>Comments / Special Instructions</b> Packed in 2 Coolers																											
				<b>Approved By (Account PM) / Date:</b>     														<b>Data Deliverable Information</b> <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLY (Level 3+4) <input type="checkbox"/> REDT1 (Level 3+4) <input type="checkbox"/> Commercial "C" <input checked="" type="checkbox"/> TRRP <input type="checkbox"/> EDD Format <input type="checkbox"/> Other														<b>Comments / Special Instructions</b> Packed in 2 Coolers																											
<b>Refined by:</b> <b>Relinquished by Sampler:</b> <b>Relinquished by:</b>				<b>Sample Custody must be documented below each time samples change possession, including courier delivery.</b> Date Time: 2-16-13 1100 Received By: 1 Date Time: Received By: 3 Date Time: Received By: 5														<b>Relinquished By:</b> 2 <b>Relinquished By:</b> 4 <b>Custody Seal #</b>														<b>Date Time:</b> 2-16-13 <b>Date Time:</b> 2-16-13 <b>Date Time:</b> 2-16-13														<b>Received By:</b> 2 <b>Received By:</b> 4 <b>Received By:</b> 4													
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<b>Refined by:</b> <b>Relinquished by Sampler:</b> <b>Relinquished by:</b>				<b>Sample Custody must be documented below each time samples change possession, including courier delivery.</b> Date Time: 2-16-13 1100 Received By: 1 Date Time: Received By: 3 Date Time: Received By: 5														<b>Relinquished By:</b> 2 <b>Relinquished By:</b> 4 <b>Custody Seal #</b>														<b>Date Time:</b> 2-16-13 <b>Date Time:</b> 2-16-13 <b>Date Time:</b> 2-16-13														<b>Received By:</b> 2 <b>Received By:</b> 4 <b>Received By:</b> 4													
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**TC25608: Chain of Custody**  
**Page 1 of 3**

Accutest Job Number: TC25608      Client: EARTHCON      Project: 4TH QTR SAMPLING  
 Date / Time Received: 2/19/2013      Delivery Method: FedEx      Airbill #'s: 800894129249  
 No. Coolers: 1      Therm ID: IR6      Temp Adjustment Factor: -0.1  
 Cooler Temps (Initial/Adjusted): #1: (3.3/3.2)

**Cooler Security**      Y or N      Y or N  
 1. Custody Seals Present: ☒ ☐      3. COC Present: ☒ ☐  
 2. Custody Seals Intact: ☒ ☐      4. Smpl Dates/Time OK: ☒ ☐

**Cooler Temperature**      Y or N  
 1. Temp criteria achieved: ☒ ☐  
 2. Cooler temp verification: \_\_\_\_\_  
 3. Cooler media: Ice (Bag)

**Quality Control Preservation**      Y or N      N/A      WTB      STB  
 1. Trip Blank present / cooler: ☒ ☐ ☐      ☒ ☐  
 2. Trip Blank listed on COC: ☐ ☒ ☐  
 3. Samples preserved properly: ☒ ☐  
 4. VOCs headspace free: ☒ ☐ ☐

**Sample Integrity - Documentation**      Y or N  
 1. Sample labels present on bottles: ☒ ☐  
 2. Container labeling complete: ☒ ☐  
 3. Sample container label / COC agree: ☒ ☐

**Sample Integrity - Condition**      Y or N  
 1. Sample recvd within HT: ☒ ☐  
 2. All containers accounted for: ☒ ☐  
 3. Condition of sample: Intact

**Sample Integrity - Instructions**      Y or N      N/A  
 1. Analysis requested is clear: ☒ ☐  
 2. Bottles received for unspecified tests: ☐ ☒  
 3. Sufficient volume recvd for analysis: ☒ ☐  
 4. Compositing instructions clear: ☐ ☐ ☒  
 5. Filtering instructions clear: ☐ ☐ ☒

Comments    The trip blank is listed on a separate chain-of-custody.

5.1  
5

**TC25608: Chain of Custody**  
**Page 2 of 3**

# Sample Receipt Log

Page 2 of 2

Job #: TC25608

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25608-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25608-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25608-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25608-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25608-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25608-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2

5.1

5

TC25608: Chain of Custody  
Page 3 of 3

# Appendix A Laboratory Data Package Cover Page

TC25608 This data package consists of

- ☒ This signature page, the laboratory review checklist, and the following reportable data:
- ☒ R1 Field chain-of-custody documentation;
- ☒ R2 Sample identification cross-reference;
- ☒ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☒ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☒ R5 Test reports/summary forms for blank samples;
- ☒ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☒ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☒ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☒ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☒ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

**Check, if applicable:** This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

## QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

2/27/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		2/27/2013			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC25608			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS262, VE969			
#	A <sup>2</sup>	DESCRIPTION		YES		NO	NA <sup>3</sup>	NR <sup>4</sup>	ER # <sup>5</sup>
R1	OI	<b>CHAIN-OF-CUSTODY (C-O-C):</b>							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?		X					
		Were all departures from standard conditions described in an exception report?		X					
R2	OI	<b>Sample and quality control (QC) identification</b>							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?		X					
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?		X					
R3	OI	<b>Test reports</b>							
		Were samples prepared and analyzed within holding times?		X					
		Other than those results <MQL, were all other raw values bracketed by calibration standards?		X					
		Were calculations checked by a peer or supervisor?		X					
		Were all analyte identifications checked by a peer or supervisor?		X					
		Were sample detection limits reported for all analytes not detected?		X					
		Were all results for soil and sediment samples reported on a dry weight basis?				X			
		Were % moisture (or solids) reported for all soil and sediment samples?				X			
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SV846 Method 5035?				X			
		If required for the project, are TIC's reported?				X			
R4	O	<b>Surrogate recovery data</b>							
		Were surrogates added prior to extraction?		X					
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X					
R5	OI	<b>Test reports/summary forms for blank samples</b>							
		Were appropriate type(s) of blanks analyzed?		X					
		Were blanks analyzed at the appropriate frequency?		X					
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?		X					
		Were blank concentrations <MQL?		X					
R6	OI	<b>Laboratory control samples (LCS):</b>							
		Were all COCs included in the LCS?		X					
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?		X					
		Were LCSs analyzed at required frequency?		X					
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		X					
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?		X					5
		Was the LCSD RPD within QC limits?				X			
R7	OI	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>							
		Were the project/method specified analytes included in the MS and MSD?		X					
		Were MS/MSD analyzed at the appropriate frequency?		X					
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?				X			4
		Were the MS/MSD RPDs within laboratory QC limits?		X					
R8	OI	<b>Analytical duplicate data</b>							
		Were appropriate analytical duplicates analyzed for each matrix?		X					
		Were analytical duplicates analyzed at the appropriate frequency?		X					
		Were RPDs or relative standard deviations within the laboratory QC limits?		X					
R9	OI	<b>Method quantitation limits (MQLs):</b>							
		Are the MQLs for each method analyte included in the laboratory data package?		X					
		Do the MQLs correspond to the concentration of the lowest non-zero calibration?		X					
		Are unadjusted MQLs and DCs included in the laboratory data package?				X			2
R10	OI	<b>Other problems/anomalies</b>							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?		X					
		Was applicable and available technology used to lower the SDL to minimize the		X					
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?		X					3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/27/2013	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25608	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS262, VE969	
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION	YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
S1	OI	<b>Initial calibration (ICAL)</b>				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	<b>Initial and continuing calibration verification (ICCV AND CCV) and continuing</b>				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	<b>Mass spectral tuning</b>				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	<b>Internal standards (IS)</b>				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	<b>Raw data (NELAC Section 5.5.10)</b>				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	<b>Dual column confirmation</b>				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	<b>Tentatively identified compounds (TICs):</b>				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	<b>Interference Check Sample (ICS) results</b>				
		Were percent recoveries within method QC limits?			X	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	<b>Method detection limit (MDL) studies</b>				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSSs?	X			5
S11	OI	<b>Proficiency test reports</b>				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	<b>Standards documentation</b>				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	<b>Compound/analyte identification procedures</b>				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	<b>Demonstration of analyst competency (DOC)</b>				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	<b>Verification/validation documentation for methods (NELAC Chapter 5)</b>				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	<b>Laboratory standard operating procedures (SOPs)</b>				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			GSS262, VE969
ER# <sup>1</sup>	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

5.2  
5

## GC/MS Volatiles

---

## QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



## Method Blank Summary

Page 1 of 1

Job Number: TC25608

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25608-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	111%	68-124%
2037-26-5	Toluene-D8	104%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

## Blank Spike Summary

Page 1 of 1

Job Number: TC25608

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25608-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25608

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25608-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.

## GC Volatiles

## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25608

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS262-MB	SS005721.D	1	02/26/13	LT	n/a	n/a	GSS262

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25608-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

7



22 of 25  
ACCUTEST  
LABORATORIES

TC25608

## Blank Spike Summary

Page 1 of 1

Job Number: TC25608

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS262-BS	SS005718.D	1	02/26/13	LT	n/a	n/a	GSS262

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25608-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	18.1	84	68-139
74-85-1	Ethene	57.4	46.0	80	52-145
74-84-0	Ethane	43.3	38.9	90	68-131
74-98-6	Propane	60.6	52.4	86	69-131
75-28-5	Isobutane	72.5	64.2	89	72-131
106-97-8	Butane	76.6	70.1	92	66-128

\* = Outside of Control Limits.

## Matrix Spike Summary

Page 1 of 1

Job Number: TC25608

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25610-1MS	SS005727.D	1	02/26/13	LT	n/a	n/a	GSS262
TC25610-1	SS005726.D	1	02/26/13	LT	n/a	n/a	GSS262
TC25610-1	SS005729.D	10	02/26/13	LT	n/a	n/a	GSS262

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25608-1

CAS No.	Compound	TC25610-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	1610 <sup>b</sup>	21.5	1100	-2162*	68-139
74-85-1	Ethene	1.0 U	57.4	63.8	111	52-145
74-84-0	Ethane	117	43.3	144	62* <sup>a</sup>	68-131
74-98-6	Propane	1.5 U	60.6	60.1	99	69-131
75-28-5	Isobutane	1.5 U	72.5	73.7	102	72-131
106-97-8	Butane	1.5 U	76.6	80.3	105	66-128

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

Job Number: TC25608

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25609-1DUP	SS005725.D	1	02/26/13	LT	n/a	n/a	GSS262
TC25609-1	SS005724.D	1	02/26/13	LT	n/a	n/a	GSS262

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25608-1

CAS No.	Compound	TC25609-1		DUP		RPD	Limits
		ug/l	Q	ug/l	Q		
74-82-8	Methane	0.77		0.69		11	53
74-85-1	Ethene	1.0 U		ND		nc	27
74-84-0	Ethane	1.0 U		ND		nc	43
74-98-6	Propane	1.5 U		ND		nc	21
75-28-5	Isobutane	1.5 U		ND		nc	35
106-97-8	Butane	1.5 U		ND		nc	33

\* = Outside of Control Limits.

Lab #: 336579 Job #: 20733  
 Sample Name/Number: WW06-THO-021513  
 Company: Oil Tracers, LLC  
 Date Sampled: 2/15/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: Fourth Quarter Well Sampling  
 Location: Parker County, TX  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.64			
Oxygen -----	0.16			
Nitrogen -----	88.57			
Carbon Dioxide -----	0.31			
Methane -----	9.25	-41.09	-128.0	
Ethane -----	0.0721	-11.5		
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	nd			

**Remarks:**

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.73

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/27/13

## Technical Report for

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### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW07-Mer

Accutest Job Number: TC25604

Sampling Date: 02/18/13

---


### Report to:

EarthCon Consultants  
4800 Sugar Grove Suite 420  
Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

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Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC25604

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter / WW07-Mer

Sample Number	Collected		Time By	Matrix		Client Sample ID
	Date			Received	Code Type	
TC25604-1	02/18/13	08:38		02/19/13	AQ Water	WW07-MER-021813



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25604

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/27/2013 11:42:14 AM

1 Sample was collected on 02/18/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.2 Deg C. The sample received an Accutest job number of TC25604. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> VE969
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-IMS, TC25596-IMSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

<b>Matrix</b> AQ	<b>Batch ID:</b> GSS261
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-IDUP, TC25606-IMS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

## Summary of Hits

Page 1 of 1

Job Number: TC25604

Account: EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Collected: 02/18/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25604-1	WW07-MER-021813					
Methane		0.834	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.0251	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

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Report of Analysis

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## Report of Analysis

Client Sample ID: WW07-MER-021813

Lab Sample ID: TC25604-1

Matrix: AQ - Water

Method: SW846 8260B

Project: Quarterly Well Sampling, Parker County, Texas

Date Sampled: 02/18/13

Date Received: 02/19/13

Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021158.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		72-122%
17060-07-0	1,2-Dichloroethane-D4	112%		68-124%
2037-26-5	Toluene-D8	106%		80-119%
460-00-4	4-Bromofluorobenzene	106%		72-126%

U = Not detected      SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

Page 1 of 1

Client Sample ID:	WW07-MER-021813	Date Sampled:	02/18/13
Lab Sample ID:	TC25604-1	Date Received:	02/19/13
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	RSKSOP-147/175		
Project:	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005703.D	I	02/25/13	LT	n/a	n/a	GSS261
Run #2	SS005704.D	10	02/25/13	LT	n/a	n/a	GSS261

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.834 <sup>a</sup>	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0251	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form



## CHAIN OF CUSTODY

PAGE 1 OF 1

10165 Harwin Dr, Ste 150 Houston, TX 77036  
TEL: 713-271-4700 FAX: 713-271-4770  
www.accutest.com

FED-EX Tracking #		Bottle Order Control #	
Accutest Quote #		Accutest Job # TC25604	
Client / Reporting Information		Project Information	
Company Name EarthCon Consultants, Inc. Street Address 4800 Sugar Grove Blvd., Suite 390 City State Zip Stafford TX 77177 Project Contact Gabriela Floreslovo Phone # 281-201-3513 Sample(s) Name(s) RM/SH/SA		Project Name: Fourth Quarterly Well Sampling, Parker County, Texas Street Billing Information (if different from Report to) Company Name Street Address City State Zip Attention: Collection Date Time Sampled By Matrix # of bottom 2/12/13 0838 RM RW 6 L Number of preserved bottles H2 H2O ZANOH H2SO4 H2SO4 NONE C1 Water MCH TBP Na-HCO4 ENCORE OTHER BTEX 6260B Butane, Ethane, Ethene, Isobutane, Methane, Propane by RSC-175	
Field ID / Point of Collection		Requested Analyses	
LAB USE ONLY		Matrix Codes DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank	
Turnaround Time (Business days)		Data Deliverable Information	
<input checked="" type="checkbox"/> Standard <input type="checkbox"/> 8 Day RUSH <input type="checkbox"/> 4 Day RUSH <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day EMERGENCY Emergency & Rush T/A data available via Leblink		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> REDT1 (Level 3+4) <input type="checkbox"/> Commercial "C" <input checked="" type="checkbox"/> TRRP <input type="checkbox"/> EDD Format <input type="checkbox"/> Other Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC & Surrogate Summary	
Comments / Special Instructions Packaged in 2 coolers			
Sample Custody must be documented below each time samples change possession, including courier delivery.			
Relinquished By: 1 Date Time: 2-12-13 1100	Received By: 1	Relinquished By: 2 Date Time: 2-12-13	Received By: 2
Relinquished By: 3	Received By: 3	Relinquished By: 4	Received By: 4
Relinquished By: 5	Received By: 5	Custody Seal # <input type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Preserved where applicable <input type="checkbox"/> On Ice <input type="checkbox"/> Cooler Temp

TC25604: Chain of Custody  
Page 1 of 3

Accutest Job Number: TC25604      Client: EARTHCON      Project: 4TH QTR SAMPLING  
 Date / Time Received: 2/19/2013      Delivery Method: FedEx      Airbill #'s: 800894129249  
 No. Coolers: 1      Therm ID: IR6      Temp Adjustment Factor: -0.1  
 Cooler Temps (Initial/Adjusted): #1: (3.3/3.2)

**Cooler Security**

Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Cooler Temperature**

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: |                                     |                          |
| 3. Cooler media:             | <u>Ice (Bag)</u>                    |                          |

**Quality Control Preservation**

Y or N N/A

WTB STB

- |                                 |                                     |                                     |                          |                                     |                          |
|---------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| 1. Trip Blank present / cooler: | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                                     |                          |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |                          |
| 4. VOCs headspace free:         | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |                          |

**Sample Integrity - Documentation**

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Sample Integrity - Condition**

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | <u>Intact</u>                       |                          |

**Sample Integrity - Instructions**

Y or N N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

 Comments: The trip blank is listed on a separate chain-of-custody.

 5.1  
5

# Sample Receipt Log

Page 2 of 2

Job #: TC25604

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25604-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25604-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25604-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25604-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25604-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25604-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2

5.1  
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**TC25604: Chain of Custody**  
**Page 3 of 3**

# Appendix A Laboratory Data Package Cover Page

TC25604 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

**Check, if applicable:** This laboratory meets an exception under 30 TAC§25.6 and was last inspection by

☐ [X] TCEQ or ☐ \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

## QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

2/27/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		2/27/2013			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC25604			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS261, VE969			
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION				YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
R1	OI	<b>CHAIN-OF-CUSTODY (C-O-C):</b>							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	<b>Sample and quality control (QC) Identification</b>							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	<b>Test reports</b>							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	<b>Surrogate recovery data</b>							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	<b>Test reports/summary forms for blank samples</b>							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	<b>Laboratory control samples (LCS):</b>							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?					X		4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	<b>Analytical duplicate data</b>							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	<b>Method quantitation limits (MQLs):</b>							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCs included in the laboratory data package?					X		2
R10	OI	<b>Other problems/anomalies</b>							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

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Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/27/2013	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25604	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS261, VE969	
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION	YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
S1	OI	<b>Initial calibration (ICAL)</b>				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	<b>Initial and continuing calibration verification (ICCV AND CCV) and continuing</b>				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	<b>Mass spectral tuning</b>				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	<b>Internal standards (IS)</b>				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	<b>Raw data (NELAC Section 5.5.10)</b>				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	<b>Dual column confirmation</b>				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	<b>Tentatively identified compounds (TICs):</b>				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	<b>Interference Check Sample (ICS) results</b>				
		Were percent recoveries within method QC limits?			X	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	<b>Method detection limit (MDL) studies</b>				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	<b>Proficiency test reports</b>				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	<b>Standards documentation</b>				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	<b>Compound/analyte identification procedures</b>				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	<b>Demonstration of analyst competency (DOC)</b>				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	<b>Verification/validation documentation for methods (NELAC Chapter 5)</b>				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	<b>Laboratory standard operating procedures (SOPs)</b>				
		Are laboratory SOPs current and on file for each method performed?	X			

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LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			2/27/2013
			TC25604
			GSS261, VE969
ER#	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

5.2  
5



## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25604

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25604-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	109% 72-122%
17060-07-0	1,2-Dichloroethane-D4	111% 68-124%
2037-26-5	Toluene-D8	104% 80-119%
460-00-4	4-Bromofluorobenzene	104% 72-126%

6.1.1

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## Blank Spike Summary

Page 1 of 1

Job Number: TC25604

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25604-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25604

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25604-1

CAS No.	Compound	TC25596-1	Spike	MS	MS	MSD	MSD	RPD	Limits
		ug/l	Q	ug/l	%	ug/l	%		Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.

## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

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## Method Blank Summary

Page 1 of 1

Job Number: TC25604

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25604-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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## Blank Spike Summary

Page 1 of 1

Job Number: TC25604

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25604-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128

\* = Outside of Control Limits.

# Matrix Spike Summary

Page 1 of 1

Job Number: TC25604  
Account: PESTXST EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25604-1

CAS No.	Compound	TC25606-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	1490 <sup>b</sup>	21.5	1520	249* <sup>a</sup>	68-139
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145
74-84-0	Ethane	104	43.3	137	75	68-131
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131
75-28-5	Isobutane	1.5 U	72.5	52.8	73	72-131
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128

- (a) Outside control limits due to high level in sample relative to spike amount.  
(b) Result is from Run #2.

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

Job Number: TC25604

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25604-1

CAS No.	Compound	TC25599-1		DUP		Q	RPD	Limits
		ug/l	Q	ug/l	Q			
74-82-8	Methane	5.72		8.04			34	53
74-85-1	Ethene	1.0 U		ND			nc	27
74-84-0	Ethane	1.0 U		ND			nc	43
74-98-6	Propane	1.5 U		ND			nc	21
75-28-5	Isobutane	1.5 U		ND			nc	35
106-97-8	Butane	1.5 U		ND			nc	33

\* = Outside of Control Limits.

Lab #: 336588 Job #: 20733  
 Sample Name/Number: WW07-MER-021813  
 Company: Oil Tracers, LLC  
 Date Sampled: 2/18/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: Fourth Quarter Well Sampling  
 Location: Parker County, TX  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.52			
Oxygen -----	0.14			
Nitrogen -----	82.64			
Carbon Dioxide -----	0.35			
Methane -----	15.17	-43.50	-141.9	
Ethane -----	0.182	-13.9		
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	nd			

## Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.71

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/28/13

## Technical Report for

### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW10-Hay

Accutest Job Number: TC25596

Sampling Date: 02/17/13

### Report to:

EarthCon Consultants  
4800 Sugar Grove Suite 420  
Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

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Test results relate only to samples analyzed.

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<b>7.1: Method Blank Summary .....</b>	<b>22</b>
<b>7.2: Blank Spike Summary .....</b>	<b>23</b>
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## Sample Summary

EarthCon Consultants

Job No: TC25596

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter / WW10-Hay

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
TC25596-1	02/17/13	07:56	02/19/13	AQ	Water	WW10-HAY-021713
TC25596-1D	02/17/13	07:56	02/19/13	AQ	Water Dup/MSD	WW10-HAY-021713 MSD
TC25596-1S	02/17/13	07:56	02/19/13	AQ	Water Matrix Spike	WW10-HAY-021713 MS



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25596

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/26/2013 10:50:09 AM

1 Sample was collected on 02/17/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25596. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> VE969
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

<b>Matrix</b> AQ	<b>Batch ID:</b> GSS260
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1DUP, TC25596-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used.

## Summary of Hits

Page 1 of 1

Job Number: TC25596  
Account: EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas  
Collected: 02/17/13



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25596-1	WW10-HAY-021713					
Methane		0.195	0.0025	0.0015	mg/l	RSKSOP-147/175
Ethane		0.0153	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

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Report of Analysis

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## Report of Analysis

Client Sample ID:	WW10-HAY-021713	Date Sampled:	02/17/13
Lab Sample ID:	TC25596-1	Date Received:	02/19/13
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		72-122%
17060-07-0	1,2-Dichloroethane-D4	111%		68-124%
2037-26-5	Toluene-D8	106%		80-119%
460-00-4	4-Bromofluorobenzene	106%		72-126%

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	WW10-HAY-021713	Date Sampled:	02/17/13
Lab Sample ID:	TC25596-1	Date Received:	02/19/13
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	RSKSOP-147/175		
Project:	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
Run #2	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.195 <sup>a</sup>	0.0025	0.0015	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0153	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form

[illegible]

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**TC25596: Chain of Custody**  
**Page 1 of 3**



## Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Accutest Job Number: TC25596 Client: EARTHCON Project: 4TH QTR SAMPLING  
Date / Time Received: 2/19/2013 Delivery Method: FedEx Airbill #'s: 800894129249  
No. Coolers: 1 Therm ID: IR6 Temp Adjustment Factor: -0.1  
Cooler Temps (Initial/Adjusted): #1: (3.6/3.5)

**Cooler Security** Y or N Y or N  
1. Custody Seals Present: ☒ ☐ 3. COC Present: ☒ ☐  
2. Custody Seals Intact: ☒ ☐ 4. Smpl Dates/Time OK: ☒ ☐

**Cooler Temperature** Y or N  
1. Temp criteria achieved: ☒ ☐  
2. Cooler temp verification: \_\_\_\_\_  
3. Cooler media: Ice (Bag)

**Quality Control Preservation** Y or N N/A WTB STB  
1. Trip Blank present / cooler: ☒ ☐ ☐ ☒ ☐  
2. Trip Blank listed on COC: ☐ ☒ ☐  
3. Samples preserved properly: ☒ ☐  
4. VOCs headspace free: ☒ ☐ ☐

**Sample Integrity - Documentation** Y or N  
1. Sample labels present on bottles: ☒ ☐  
2. Container labeling complete: ☒ ☐  
3. Sample container label / COC agree: ☒ ☐

**Sample Integrity - Condition** Y or N  
1. Sample recvd within HT: ☒ ☐  
2. All containers accounted for: ☒ ☐  
3. Condition of sample: Intact

**Sample Integrity - Instructions** Y or N N/A  
1. Analysis requested is clear: ☒ ☐  
2. Bottles received for unspecified tests: ☐ ☒  
3. Sufficient volume recvd for analysis: ☒ ☐  
4. Compositing instructions clear: ☐ ☐ ☒  
5. Filtering instructions clear: ☐ ☐ ☒

Comments The trip blank is listed on a separate chain-of-custody.

TC25596: Chain of Custody  
Page 2 of 3

# Sample Receipt Log

Page 2 of 2

Job #: TC25596

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25596-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	12	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	13	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	14	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	15	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	16	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	17	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	18	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5

TC25596: Chain of Custody

Page 3 of 3

## Appendix A Laboratory Data Package Cover Page

TC25596 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

**Check, if applicable:** This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

### QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

2/26/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		2/26/2013			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC25598			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS280, VE969			
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION				YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
R1	OI	<b>CHAIN-OF-CUSTODY (C-O-C):</b>							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	<b>Sample and quality control (QC) Identification</b>							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	<b>Test reports</b>							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	<b>Surrogate recovery data</b>							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	<b>Test reports/summary forms for blank samples</b>							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	<b>Laboratory control samples (LCS):</b>							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?					X		4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	<b>Analytical duplicate data</b>							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	<b>Method quantitation limits (MQLs):</b>							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration?				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?					X		2
R10	OI	<b>Other problems/anomalies</b>							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/26/2013	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25596	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS260, VE969	
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION	YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
S1	OI	<b>Initial calibration (ICAL)</b>				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	<b>Initial and continuing calibration verification (ICCV AND CCV) and continuing</b>				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB-MDL?			X	
S3	O	<b>Mass spectral tuning</b>				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	<b>Internal standards (IS)</b>				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	<b>Raw data (NELAC Section 5.5.10)</b>				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	<b>Dual column confirmation</b>				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	<b>Tentatively identified compounds (TICs):</b>				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	<b>Interference Check Sample (ICS) results</b>				
		Were percent recoveries within method QC limits?			X	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	<b>Method detection limit (MDL) studies</b>				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSS?	X			5
S11	OI	<b>Proficiency test reports</b>				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	<b>Standards documentation</b>				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	<b>Compound/analyte identification procedures</b>				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	<b>Demonstration of analyst competency (DOC)</b>				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	<b>Verification/validation documentation for methods (NELAC Chapter 5)</b>				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	<b>Laboratory standard operating procedures (SOPs)</b>				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			GSS260, VE069
ER# <sup>1</sup>	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25596

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25596-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	109% 72-122%
17060-07-0	1,2-Dichloroethane-D4	111% 68-124%
2037-26-5	Toluene-D8	104% 80-119%
460-00-4	4-Bromofluorobenzene	104% 72-126%

6.1.1

6

## Blank Spike Summary

Page 1 of 1

Job Number: TC25596  
Account: PESTXST EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25596-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25596

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25596-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.



## GC Volatiles

---

## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25596

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-MB	SS005668.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25596-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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## Blank Spike Summary

Page 1 of 1

Job Number: TC25596

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-BS	SS005666.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25596-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	19.4	90	68-139
74-85-1	Ethene	57.4	46.7	81	52-145
74-84-0	Ethane	43.3	39.3	91	68-131
74-98-6	Propane	60.6	51.8	85	69-131
75-28-5	Isobutane	72.5	62.2	86	72-131
106-97-8	Butane	76.6	68.3	89	66-128

\* = Outside of Control Limits.

## Matrix Spike Summary

Page 1 of 1

Job Number: TC25596

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	SS005671.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25596-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	195 <sup>b</sup>	21.5	251	-168* <sup>a</sup>	68-139
74-85-1	Ethene	1.0 U	57.4	53.3	93	52-145
74-84-0	Ethane	15.3	43.3	55.7	93	68-131
74-98-6	Propane	1.5 U	60.6	56.0	92	69-131
75-28-5	Isobutane	1.5 U	72.5	68.2	94	72-131
106-97-8	Butane	1.5 U	76.6	75.2	98	66-128

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

Job Number: TC25596

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1DUP	SS005670.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25596-1

CAS No.	Compound	TC25596-1 ug/l	DUP Q ug/l	Q	RPD	Limits
74-82-8	Methane	195 <sup>a</sup>	302	E	5	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	15.3	15.8		4	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33

(a) Result is from Run #2.

\* = Outside of Control Limits.



02/27/13

## Technical Report for

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### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW11-And

Accutest Job Number: TC25599

Sampling Date: 02/16/13

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### Report to:

EarthCon Consultants  
4800 Sugar Grove Suite 420  
Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

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Test results relate only to samples analyzed.

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## Sample Summary

EarthCon Consultants

Job No: TC25599

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter / WW11-And

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC25599-1	02/16/13	08:40	02/19/13	AQ Water	WW11-AND-021613



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25599

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/27/2013 11:20:09 AM

1 Sample was collected on 02/16/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25599. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> VE969
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

<b>Matrix</b> AQ	<b>Batch ID:</b> GSS261
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-IDUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

## Summary of Hits

Page 1 of 1

Job Number: TC25599  
Account: EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas  
Collected: 02/16/13



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25599-1	WW11-AND-021613					
Methane		0.00572	0.00050	0.00030	mg/l	RSKSOP-147/175



Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b>	WW11-AND-021613	<b>Date Sampled:</b>	02/16/13
<b>Lab Sample ID:</b>	TC25599-1	<b>Date Received:</b>	02/19/13
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021153.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		72-122%
17060-07-0	1,2-Dichloroethane-D4	112%		68-124%
2037-26-5	Toluene-D8	107%		80-119%
460-00-4	4-Bromofluorobenzene	106%		72-126%

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b> WW11-AND-021613	<b>Date Sampled:</b> 02/16/13
<b>Lab Sample ID:</b> TC25599-1	<b>Date Received:</b> 02/19/13
<b>Matrix:</b> AQ - Water	<b>Percent Solids:</b> n/a
<b>Method:</b> RSKSOP-147/175	
<b>Project:</b> Quarterly Well Sampling, Parker County, Texas	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005692.D	1	02/25/13	LT	n/a	n/a	GSS261
Run #2							

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.00572	0.00050	0.00030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.00050 U	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form



Accutest Job Number:	TC25599	Client:	EARTHCON	Project:	4TH QTR SAMPLING
Date / Time Received:	2/19/2013	Delivery Method:	FedEx	Airbill #'s:	800894129249
No. Coolers:	1	Therm ID:	IR6	Temp Adjustment Factor:	-0.1
Cooler Temps (Initial/Adjusted):	#1: (3.6/3.5)				

<u>Cooler Security</u>				<u>Y or N</u>		<u>Y or N</u>			
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
<u>Cooler Temperature</u>									
		<u>Y or N</u>							
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>							
2. Cooler temp verification:									
3. Cooler media:	Ice (Bag)								
<u>Quality Control Preservation</u>									
		<u>Y or N</u>		<u>N/A</u>					
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>WTB</u>	<u>STB</u>				
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
4. VOCs headspace free:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						

<u>Sample Integrity - Documentation</u>				<u>Y or N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
<u>Sample Integrity - Condition</u>				<u>Y or N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
3. Condition of sample:					Intact
<u>Sample Integrity - Instructions</u>				<u>Y or N</u>	
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>

Comments	The trip blank is listed on a separate chain-of-custody.
----------	--

## Sample Receipt Log

Page 2 of 2

Job #: TC25599

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25599-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25599-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25599-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25599-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25599-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25599-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5

5.1

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**TC25599: Chain of Custody**

Page 3 of 3

# Appendix A Laboratory Data Package Cover Page

TC25599 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

**Check, if applicable:** This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

[ ] [X] TCEQ or [ ] \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

## QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

2/27/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		2/27/2013			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC25599			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS261, VE969			
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION				YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
R1	OI	<b>CHAIN-OF-CUSTODY (C-O-C):</b>							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	<b>Sample and quality control (QC) Identification</b>							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	<b>Test reports</b>							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	<b>Surrogate recovery data</b>							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	<b>Test reports/summary forms for blank samples</b>							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	<b>Laboratory control samples (LCS):</b>							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?						X	4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	<b>Analytical duplicate data</b>							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	<b>Method quantitation limits (MQLs):</b>							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?						X	2
R10	OI	<b>Other problems/anomalies</b>							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/27/2013	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25599	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS261, VE969	
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION	YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
S1	OI	<b>Initial calibration (ICAL)</b>				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	<b>Initial and continuing calibration verification (ICCV AND CCV) and continuing</b>				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	<b>Mass spectral tuning</b>				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	<b>Internal standards (IS)</b>				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	<b>Raw data (NELAC Section 5.5.10)</b>				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	<b>Dual column confirmation</b>				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	<b>Tentatively identified compounds (TICs):</b>				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	<b>Interference Check Sample (ICS) results</b>				
		Were percent recoveries within method QC limits?			X	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	<b>Method detection limit (MDL) studies</b>				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	<b>Proficiency test reports</b>				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	<b>Standards documentation</b>				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	<b>Compound/analyte identification procedures</b>				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	<b>Demonstration of analyst competency (DOC)</b>				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	<b>Verification/validation documentation for methods (NELAC Chapter 5)</b>				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	<b>Laboratory standard operating procedures (SOPs)</b>				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	2/27/2013
Reviewer Name:		Anita Patel	Laboratory Project Number:
			TC25599
		Prep Batch Number(s):	GSS261, VE969
ER# <sup>1</sup>	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

5.2  
5

### GC/MS Volatiles

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### QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



## Method Blank Summary

Page 1 of 1

Job Number: TC25599  
Account: PESTXST EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25599-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries	Limits	
1868-53-7	Dibromofluoromethane	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	111%	68-124%
2037-26-5	Toluene-D8	104%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

# Blank Spike Summary

Page 1 of 1

Job Number: TC25599

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25599-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25599

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25599-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.

## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25599

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25599-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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## Blank Spike Summary

Page 1 of 1

Job Number: TC25599

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25599-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128

\* = Outside of Control Limits.

## Matrix Spike Summary

Page 1 of 1

Job Number: TC25599

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RKSOP-147/175

TC25599-1

CAS No.	Compound	TC25606-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	1490 <sup>b</sup>	21.5	1520	249* <sup>a</sup>	68-139
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145
74-84-0	Ethane	104	43.3	137	75	68-131
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131
75-28-5	Isobutane	1.5 U	72.5	52.8	73	72-131
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

Job Number: TC25599

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25599-1

CAS No.	Compound	TC25599-1		DUP		RPD	Limits
		ug/l	Q	ug/l	Q		
74-82-8	Methane	5.72		8.04		34	53
74-85-1	Ethene	1.0 U		ND		nc	27
74-84-0	Ethane	1.0 U		ND		nc	43
74-98-6	Propane	1.5 U		ND		nc	21
75-28-5	Isobutane	1.5 U		ND		nc	35
106-97-8	Butane	1.5 U		ND		nc	33

\* = Outside of Control Limits.

Lab #: 336581 Job #: 20733  
 Sample Name/Number: WW11-AND-021613  
 Company: Oil Tracers, LLC  
 Date Sampled: 2/16/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: Fourth Quarter Well Sampling  
 Location: Parker County, TX  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.55			
Oxygen -----	13.48			
Nitrogen -----	84.61			
Carbon Dioxide -----	0.27			
Methane -----	0.0854			
Ethane -----	0.0012			
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	nd			

**Remarks:**

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.74

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/28/13

## Technical Report for

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### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW13-Str

Accutest Job Number: TC25598

Sampling Date: 02/17/13

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### Report to:

EarthCon Consultants  
4800 Sugar Grove Suite 420  
Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: **29**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

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Test results relate only to samples analyzed.

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## Sample Summary

EarthCon Consultants

Job No: TC25598

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter / WW13-Str

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC25598-1	02/17/13	09:52	02/19/13	AQ Water	WW13-STR-021713



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25598

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/27/2013 10:39:20 AM

1 Sample was collected on 02/17/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25598. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> VE969
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

<b>Matrix</b> AQ	<b>Batch ID:</b> GSS260
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-IDUP, TC25596-1MS were used as the QC samples indicated.

<b>Matrix</b> AQ	<b>Batch ID:</b> GSS261
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-IDUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

## Summary of Hits

Page 1 of 1

Job Number: TC25598  
Account: EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas  
Collected: 02/17/13

Lab Sample ID	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25598-1	WW13-STR-021713					
Methane		5.43	0.025	0.015	mg/l	RSKSOP-147/175
Ethane		0.442	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

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Report of Analysis

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## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	WW13-STR-021713	<b>Date Sampled:</b>	02/17/13
<b>Lab Sample ID:</b>	TC25598-1	<b>Date Received:</b>	02/19/13
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021152.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		72-122%
17060-07-0	1,2-Dichloroethane-D4	114%		68-124%
2037-26-5	Toluene-D8	107%		80-119%
460-00-4	4-Bromofluorobenzene	108%		72-126%

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> WW13-STR-021713			
<b>Lab Sample ID:</b>	TC25598-1	<b>Date Sampled:</b>	02/17/13
<b>Matrix:</b>	AQ - Water	<b>Date Received:</b>	02/19/13
<b>Method:</b>	RSKSOP-147/175	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005682.D	1	02/22/13	LT	n/a	n/a	GSS260
Run #2	SS005691.D	50	02/25/13	LT	n/a	n/a	GSS261

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	5.43 <sup>a</sup>	0.025	0.015	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.442	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Misc. Forms

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5

## Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form



Accutest Job Number: TC25598      Client: EARTHCON      Project: 4TH QTR SAMPLING  
 Date / Time Received: 2/19/2013      Delivery Method: FedEx      Airbill #s: 800894129249  
 No. Coolers: 1      Therm ID: IR6      Temp Adjustment Factor: -0.1  
 Cooler Temps (Initial/Adjusted): #1: (3.6/3.5)

**Cooler Security**      Y or N      Y or N  
 1. Custody Seals Present: ☒ ☐      3. COC Present: ☒ ☐  
 2. Custody Seals Intact: ☒ ☐      4. SmpI Dates/Time OK: ☒ ☐

**Cooler Temperature**      Y or N  
 1. Temp criteria achieved: ☒ ☐  
 2. Cooler temp verification: \_\_\_\_\_  
 3. Cooler media: Ice (Bag)

<b>Quality Control Preservation</b>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>	<u>WTB</u>	<u>STB</u>
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		

**Sample Integrity - Documentation**      Y or N  
 1. Sample labels present on bottles: ☒ ☐  
 2. Container labeling complete: ☒ ☐  
 3. Sample container label / COC agree: ☒ ☐

**Sample Integrity - Condition**      Y or N  
 1. Sample recvd within HT: ☒ ☐  
 2. All containers accounted for: ☒ ☐  
 3. Condition of sample: Intact

<b>Sample Integrity - Instructions</b>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments: The trip blank is listed on a separate chain-of-custody.

**TC25598: Chain of Custody**  
**Page 2 of 3**

## Sample Receipt Log

Page 2 of 2

Job #: TC25598

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25598-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25598-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25598-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25598-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25598-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25598-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5

 5.1  
 5

**TC25598: Chain of Custody**  
**Page 3 of 3**

# Appendix A Laboratory Data Package Cover Page

TC25598 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

**Check, if applicable:** This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

- ☐ [X] TCEQ or ☐ \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

## QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

2/27/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		2/27/2013			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC25598			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS260, GSS261, VE969			
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION				YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
R1	OI	<b>CHAIN-OF-CUSTODY (C-O-C):</b>							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	<b>Sample and quality control (QC) identification</b>							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	<b>Test reports</b>							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	<b>Surrogate recovery data</b>							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	<b>Test reports/summary forms for blank samples</b>							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	<b>Laboratory control samples (LCS):</b>							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?						X	4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	<b>Analytical duplicate data</b>							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	<b>Method quantitation limits (MQLs):</b>							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSSs included in the laboratory data package?						X	2
R10	OI	<b>Other problems/anomalies</b>							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/27/2013	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25598	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS260, GSS261, VE969	
#1	A2	DESCRIPTION	YES   NO   NA <sup>1</sup>   NR <sup>1</sup>   ER # <sup>2</sup>			
S1	OI	<b>Initial calibration (ICAL)</b>				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	<b>Initial and continuing calibration verification (ICCV AND CCV) and continuing</b>				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	<b>Mass spectral tuning</b>				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	<b>Internal standards (IS)</b>				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	<b>Raw data (NELAC Section 5.5.10)</b>				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	<b>Dual column confirmation</b>				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	<b>Tentatively identified compounds (TICs):</b>				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	<b>Interference Check Sample (ICS) results</b>				
		Were percent recoveries within method QC limits?			X	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	<b>Method detection limit (MDL) studies</b>				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	<b>Proficiency test reports</b>				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	<b>Standards documentation</b>				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	<b>Compound/analyte identification procedures</b>				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	<b>Demonstration of analyst competency (DOC)</b>				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	<b>Verification/validation documentation for methods (NELAC Chapter 5)</b>				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	<b>Laboratory standard operating procedures (SOPs)</b>				
		Are laboratory SOPs current and on file for each method performed?	X			

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2  
6

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			GSS260, GSS261, VE969
ER# <sup>1</sup>	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

52  
5

## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



## Method Blank Summary

Page 1 of 1

Job Number: TC25598  
Account: PESTXST EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25598-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	109% 72-122%
17060-07-0	1,2-Dichloroethane-D4	111% 68-124%
2037-26-5	Toluene-D8	104% 80-119%
460-00-4	4-Bromofluorobenzene	104% 72-126%

6.1.1

6

## Blank Spike Summary

Page 1 of 1

Job Number: TC25598

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25598-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25598

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25598-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.

## GC Volatiles

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## QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25598

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-MB	SS005668.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25598-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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## Method Blank Summary

Page 1 of 1

Job Number: TC25598  
Account: PESTXST EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25598-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	

7.1.2

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## Blank Spike Summary

Page 1 of 1

Job Number: TC25598

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-BS	SS005666.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25598-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-85-1	Ethene	57.4	46.7	81	52-145
74-84-0	Ethane	43.3	39.3	91	68-131
74-98-6	Propane	60.6	51.8	85	69-131
75-28-5	Isobutane	72.5	62.2	86	72-131
106-97-8	Butane	76.6	68.3	89	66-128

\* = Outside of Control Limits.

## Blank Spike Summary

Page 1 of 1

Job Number: TC25598

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25598-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139

\* = Outside of Control Limits.

# Matrix Spike Summary

Page 1 of 1

Job Number: TC25598

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	SS005671.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25598-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-85-1	Ethene	1.0 U	57.4	53.3	93	52-145
74-84-0	Ethane	15.3	43.3	55.7	93	68-131
74-98-6	Propane	1.5 U	60.6	56.0	92	69-131
75-28-5	Isobutane	1.5 U	72.5	68.2	94	72-131
106-97-8	Butane	1.5 U	76.6	75.2	98	66-128

\* = Outside of Control Limits.

## Matrix Spike Summary

Page 1 of 1

Job Number: TC25598

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25598-1

CAS No.	Compound	TC25606-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	1490 <sup>b</sup>	21.5	1520	249* <sup>a</sup>	68-139

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

Job Number: TC25598

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1DUP	SS005670.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25598-1

CAS No.	Compound	TC25596-1		Q	RPD	Limits
		ug/l	DUP ug/l			
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	15.3	15.8		4	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

Job Number: TC25598

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25598-1

CAS No.	Compound	TC25599-1		DUP		Q	RPD	Limits
		ug/l	Q	ug/l	Q			
74-82-8	Methane	5.72		8.04			34	53

\* = Outside of Control Limits.

Lab #: 336585 Job #: 20733  
 Sample Name/Number: WW13-STR-021713  
 Company: Oil Tracers, LLC  
 Date Sampled: 2/17/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: Fourth Quarter Well Sampling  
 Location: Parker County, TX  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.07			
Oxygen -----	0.098			
Nitrogen -----	57.94			
Carbon Dioxide -----	0.42			
Methane -----	38.45	-46.30	-184.4	
Ethane -----	2.02	-31.8		
Ethylene -----	nd			
Propane -----	0.0006			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	0.0006			
Iso-pentane -----	0.0018			
N-pentane -----	nd			
Hexanes + -----	0.0006			

**Remarks:**

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.66

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

## Technical Report for

---

### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW14A-Hur

Accutest Job Number: TC25602

Sampling Date: 02/17/13

---

### Report to:

EarthCon Consultants  
4800 Sugar Grove Suite 420  
Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

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Test results relate only to samples analyzed.

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## Sample Summary

EarthCon Consultants

Job No: TC25602

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter / WW14A-Hur

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC25602-1	02/17/13	13:02	02/19/13	AQ Water	WW14A-HUR-021713



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25602

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/27/2013 11:33:33 AM

1 Sample was collected on 02/17/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25602. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> VE969
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

<b>Matrix</b> AQ	<b>Batch ID:</b> GSS261
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-1DUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

## Summary of Hits

Page 1 of 1

**Job Number:** TC25602  
**Account:** EarthCon Consultants  
**Project:** Quarterly Well Sampling, Parker County, Texas  
**Collected:** 02/17/13



Lab Sample ID	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25602-1	WW14A-HUR-021713					
Methane		0.685	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.0486	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

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Report of Analysis

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## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	WW14A-HUR-021713	<b>Date Sampled:</b>	02/17/13
<b>Lab Sample ID:</b>	TC25602-1	<b>Date Received:</b>	02/19/13
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021156.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		72-122%
17060-07-0	1,2-Dichloroethane-D4	110%		68-124%
2037-26-5	Toluene-D8	106%		80-119%
460-00-4	4-Bromofluorobenzene	104%		72-126%

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

Page 1 of 1

Client Sample ID: WW14A-HUR-021713

Lab Sample ID: TC25602-1

Date Sampled: 02/17/13

Matrix: AQ - Water

Date Received: 02/19/13

Method: RSKSOP-147/175

Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005699.D	1	02/25/13	LT	n/a	n/a	GSS261
Run #2	SS005700.D	10	02/25/13	LT	n/a	n/a	GSS261

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.685 <sup>a</sup>	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0486	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

### Misc. Forms

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5

### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form



Accutest Job Number: TC25602      Client: EARTHCON      Project: 4TH QTR SAMPLING  
 Date / Time Received: 2/19/2013      Delivery Method: FedEx      Airbill #'s: 800894129249  
 No. Coolers: 1      Therm ID: IR6      Temp Adjustment Factor: -0.1  
 Cooler Temps (Initial/Adjusted): #1: (3.6/3.5)

<b>Cooler Security</b>		<b>Y or N</b>		<b>Y or N</b>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Cooler Temperature</b>		<b>Y or N</b>			
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. Cooler temp verification:					
3. Cooler media:	<u>Ice (Bag)</u>				
<b>Quality Control Preservation</b>	<b>Y</b>	<b>or</b>	<b>N</b>	<b>N/A</b>	<b>WTB STB</b>
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	

<b>Sample Integrity - Documentation</b>		<b>Y</b>	<b>or</b>	<b>N</b>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
<b>Sample Integrity - Condition</b>		<b>Y</b>	<b>or</b>	<b>N</b>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
3. Condition of sample:	<u>Intact</u>				
<b>Sample Integrity - Instructions</b>		<b>Y</b>	<b>or</b>	<b>N</b>	<b>N/A</b>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>		
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>

Comments: The trip blank is listed on a separate chain-of-custody.

5.1  
5

**TC25602: Chain of Custody**  
**Page 2 of 3**

## Sample Receipt Log

Page 2 of 2

Job #: TC25602

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25602-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25602-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25602-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25602-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25602-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25602-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5

 5.1  
5

**TC25602: Chain of Custody**  
**Page 3 of 3**

# Appendix A Laboratory Data Package Cover Page

TC25602 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

**Check, if applicable:** This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

**QA Manager**

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

2/27/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast Quarterly Well Sampling, Parker County, Texas		LRC Date:		2/27/2013			
Project Name:				Laboratory Project Number:		TC25602			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS261, VE969			
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION				YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?						X	4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCs included in the laboratory data package?						X	2
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/27/2013				
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25602				
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS261, VE969				
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION	YES	NO	NA <sup>3</sup>	NR <sup>4</sup>	ER <sup>5</sup>		
S1	OI	<b>Initial calibration (ICAL)</b>							
		Were response factors and/or relative response factors for each analyte within QC limits?	X						
		Were percent RSDs or correlation coefficient criteria met?	X						
		Was the number of standards recommended in the method used for all analytes?	X						
		Were all points generated between the lowest and highest standard used to calculate the curve?	X						
		Are ICAL data available for all instruments used?	X						
		Has the initial calibration curve been verified using an appropriate second source standard?	X						
S2	OI	<b>Initial and continuing calibration verification (ICCV AND CCV) and continuing</b>							
		Was the CCV analyzed at the method-required frequency?	X						
		Were percent differences for each analyte within the method-required QC limits?	X						
		Was the ICAL curve verified for each analyte?	X						
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X				
S3	O	<b>Mass spectral tuning</b>							
		Was the appropriate compound for the method used for tuning?	X						
		Were ion abundance data within the method-required QC limits?	X						
S4	O	<b>Internal standards (IS)</b>							
		Were IS area counts and retention times within the method-required QC limits?	X						
S5	OI	<b>Raw data (NELAC Section 5.5.10)</b>							
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X						
		Were data associated with manual integrations flagged on the raw data?	X						
S6	O	<b>Dual column confirmation</b>							
		Did dual column confirmation results meet the method-required QC?			X				
S7	O	<b>Tentatively identified compounds (TICs):</b>							
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X				
S8	I	<b>Interference Check Sample (ICS) results</b>							
		Were percent recoveries within method QC limits?			X				
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>							
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X				
S10	OI	<b>Method detection limit (MDL) studies</b>							
		Was a MDL study performed for each reported analyte?	X						
		Is the MDL either adjusted or supported by the analysis of DCSs?	X					5	
S11	OI	<b>Proficiency test reports</b>							
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X						
S12	OI	<b>Standards documentation</b>							
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X						
S13	OI	<b>Compound/analyte identification procedures</b>							
		Are the procedures for compound/analyte identification documented?	X						
S14	OI	<b>Demonstration of analyst competency (DOC)</b>							
		Was DOC conducted consistent with NELAC Chapter 5?	X						
		Is documentation of the analyst's competency up-to-date and on file?	X						
S15	OI	<b>Verification/validation documentation for methods (NELAC Chapter 5)</b>							
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X						
S16	OI	<b>Laboratory standard operating procedures (SOPs)</b>							
		Are laboratory SOPs current and on file for each method performed?	X						

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:	Accutest Gulf Coast	LRC Date:	2/27/2013
Project Name:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC25602
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GSS261, VE969
ER# <sup>1</sup>	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

1ER# = Exception Report Identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

5  
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### GC/MS Volatiles

---

### QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



## Method Blank Summary

Page 1 of 1

Job Number: TC25602

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25602-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries	Limits	
1868-53-7	Dibromofluoromethane	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	111%	68-124%
2037-26-5	Toluene-D8	104%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

## Blank Spike Summary

Page 1 of 1

Job Number: TC25602

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25602-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25602

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25602-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.

## GC Volatiles

---

## QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25602

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25602-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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## Blank Spike Summary

Page 1 of 1

**Job Number:** TC25602

**Account:** PESTXST EarthCon Consultants

**Project:** Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25602-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128

\* = Outside of Control Limits.

## Matrix Spike Summary

Page 1 of 1

**Job Number:** TC25602

**Account:** PESTXST EarthCon Consultants

**Project:** Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25602-1

CAS No.	Compound	TC25606-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	1490 <sup>b</sup>	21.5	1520	249* <sup>a</sup>		68-139
74-85-1	Ethene	1.0 U	57.4	51.7	90		52-145
74-84-0	Ethane	104	43.3	137	75		68-131
74-98-6	Propane	1.5 U	60.6	42.6	70		69-131
75-28-5	Isobutane	1.5 U	72.5	52.8	73		72-131
106-97-8	Butane	1.5 U	76.6	58.4	76		66-128

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

**Job Number:** TC25602

**Account:** PESTXST EarthCon Consultants

**Project:** Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25602-1

CAS No.	Compound	TC25599-1	DUP	Q	RPD	Limits
		ug/l	Q ug/l			
74-82-8	Methane	5.72	8.04	34	53	
74-85-1	Ethene	1.0 U	ND	nc	27	
74-84-0	Ethane	1.0 U	ND	nc	43	
74-98-6	Propane	1.5 U	ND	nc	21	
75-28-5	Isobutane	1.5 U	ND	nc	35	
106-97-8	Butane	1.5 U	ND	nc	33	

\* = Outside of Control Limits.

Lab #: 336586 Job #: 20733  
 Sample Name/Number: WW14A-HUR-021713  
 Company: Oil Tracers, LLC  
 Date Sampled: 2/17/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: Fourth Quarter Well Sampling  
 Location: Parker County, TX  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.47			
Oxygen -----	0.097			
Nitrogen -----	83.60			
Carbon Dioxide -----	0.40			
Methane -----	14.12	-42.68	-143.0	
Ethane -----	0.315	-25.5		
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	0.0007			
N-pentane -----	nd			
Hexanes + -----	nd			

**Remarks:**

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.70

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/28/13

## Technical Report for

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### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter /WW15-Hur

Accutest Job Number: TC25594

Sampling Date: 02/17/13

---

### Report to:

EarthCon Consultants  
4800 Sugar Grove Suite 420  
Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

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Test results relate only to samples analyzed.

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## Sample Summary

EarthCon Consultants

Job No: TC25594

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter /WW15-Hur

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC25594-1	02/17/13	14:17	02/19/13	AQ Water	WW15-HUR-021713



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25594

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/26/2013 10:35:54 AM

1 Sample was collected on 02/17/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25594. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> VE969
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

<b>Matrix</b> AQ	<b>Batch ID:</b> GSS260
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1DUP, TC25596-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

## Summary of Hits

Page 1 of 1

Job Number: TC25594  
Account: EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas  
Collected: 02/17/13



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25594-1	WW15-HUR-021713					
Methane		2.69	0.025	0.015	mg/l	RSKSOP-147/175
Ethane		0.196	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

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Report of Analysis

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## Report of Analysis

Page 1 of 1

Client Sample ID: WW15-HUR-021713

Lab Sample ID: TC25594-1

Date Sampled: 02/17/13

Matrix: AQ - Water

Date Received: 02/19/13

Method: SW846 8260B

Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021145.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		72-122%
17060-07-0	1,2-Dichloroethane-D4	111%		68-124%
2037-26-5	Toluene-D8	105%		80-119%
460-00-4	4-Bromofluorobenzene	106%		72-126%

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	WW15-HUR-021713	<b>Date Sampled:</b>	02/17/13
<b>Lab Sample ID:</b>	TC25594-1	<b>Date Received:</b>	02/19/13
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	RSKSOP-147/175		
<b>Project:</b>	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005675.D	1	02/22/13	LT	n/a	n/a	GSS260
Run #2	SS005677.D	50	02/22/13	LT	n/a	n/a	GSS260

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	2.69 <sup>a</sup>	0.025	0.015	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.196	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form



Accutest Job Number: TC25594      Client: EARTHCON      Project: 4TH QTR SAMPLING  
 Date / Time Received: 2/19/2013      Delivery Method: FedEx      Airbill #'s: 800894129249  
 No. Coolers: 1      Therm ID: IR6      Temp Adjustment Factor: -0.1  
 Cooler Temps (Initial/Adjusted): #1: (3.6/3.5)

<b>Cooler Security</b>		<b>Y or N</b>		<b>Y or N</b>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Cooler Temperature</b>		<b>Y or N</b>			
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. Cooler temp verification:					
3. Cooler media:	<u>Ice (Bag)</u>				
<b>Quality Control Preservation</b>	<b>Y</b>	<b>or</b>	<b>N</b>	<b>N/A</b>	<b>WTB STB</b>
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	

<b>Sample Integrity - Documentation</b>	<b>Y</b>	<b>or</b>	<b>N</b>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
<b>Sample Integrity - Condition</b>	<b>Y</b>	<b>or</b>	<b>N</b>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	<u>Intact</u>		
<b>Sample Integrity - Instructions</b>	<b>Y</b>	<b>or</b>	<b>N</b>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/> <input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/> <input checked="" type="checkbox"/>

Comments: The trip blank is listed on a separate chain-of-custody.

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# Sample Receipt Log

Page 2 of 2

Job #: TC25594

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25594-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25594-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25594-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25594-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25594-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25594-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5

 5.1  
 5

**TC25594: Chain of Custody**
**Page 3 of 3**

## Appendix A Laboratory Data Package Cover Page

TC25594 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

**Check, if applicable:** This laboratory meets an exception under 30 TAC§25.6 and was last inspection by

☐ [X] TCEQ or ☐ \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

**QA Manager**

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

2/26/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		2/26/2013			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC25594			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS260, VE969			
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION				YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?						X	4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?						X	2
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/26/2013	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25594	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS260, VE969	
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION	YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
S1	OI	<b>Initial calibration (ICAL)</b>				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	<b>Initial and continuing calibration verification (ICCV AND CCV) and continuing</b>				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	<b>Mass spectral tuning</b>				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	<b>Internal standards (IS)</b>				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	<b>Raw data (NELAC Section 5.5.10)</b>				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	<b>Dual column confirmation</b>				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	<b>Tentatively identified compounds (TICs):</b>				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	<b>Interference Check Sample (ICS) results</b>				
		Were percent recoveries within method QC limits?			X	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	<b>Method detection limit (MDL) studies</b>				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	<b>Proficiency test reports</b>				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	<b>Standards documentation</b>				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	<b>Compound/analyte identification procedures</b>				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	<b>Demonstration of analyst competency (DOC)</b>				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	<b>Verification/validation documentation for methods (NELAC Chapter 5)</b>				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	<b>Laboratory standard operating procedures (SOPs)</b>				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:	Accutest Gulf Coast	LRC Date:	2/26/2013
Project Name:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC25594
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GSS260, VE969
ER# <sup>1</sup>	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



## Method Blank Summary

Page 1 of 1

Job Number: TC25594

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25594-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	109% 72-122%
17060-07-0	1,2-Dichloroethane-D4	111% 68-124%
2037-26-5	Toluene-D8	104% 80-119%
460-00-4	4-Bromofluorobenzene	104% 72-126%

6.1.1

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## Blank Spike Summary

Page 1 of 1

Job Number: TC25594

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25594-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25594

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25594-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.

## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25594  
Account: PESTXST EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-MB	SS005668.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/I75

TC25594-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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## Blank Spike Summary

Page 1 of 1

Job Number: TC25594

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-BS	SS005666.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25594-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	19.4	90	68-139
74-85-1	Ethene	57.4	46.7	81	52-145
74-84-0	Ethane	43.3	39.3	91	68-131
74-98-6	Propane	60.6	51.8	85	69-131
75-28-5	Isobutane	72.5	62.2	86	72-131
106-97-8	Butane	76.6	68.3	89	66-128

\* = Outside of Control Limits.

# Matrix Spike Summary

Page 1 of 1

Job Number: TC25594

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	SS005671.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25594-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	195 <sup>b</sup>	21.5	251	-168* <sup>a</sup>	68-139
74-85-1	Ethene	1.0 U	57.4	53.3	93	52-145
74-84-0	Ethane	15.3	43.3	55.7	93	68-131
74-98-6	Propane	1.5 U	60.6	56.0	92	69-131
75-28-5	Isobutane	1.5 U	72.5	68.2	94	72-131
106-97-8	Butane	1.5 U	76.6	75.2	98	66-128

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

\* = Outside of Control Limits.

# Duplicate Summary

Page 1 of 1

Job Number: TC25594

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1DUP	SS005670.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25594-1

CAS No.	Compound	TC25596-1		Q	RPD	Limits
		ug/l	DUP ug/l			
74-82-8	Methane	195 <sup>a</sup>	302	E	5	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	15.3	15.8		4	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33

(a) Result is from Run #2.

\* = Outside of Control Limits.

Lab #: 336587 Job #: 20733  
 Sample Name/Number: WW15-HUR-021713  
 Company: Oil Tracers, LLC  
 Date Sampled: 2/17/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: Fourth Quarter Well Sampling  
 Location: Parker County, TX  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.29			
Oxygen -----	0.094			
Nitrogen -----	71.42			
Carbon Dioxide -----	0.20			
Methane -----	26.01	-46.57	-162.7	
Ethane -----	0.982	-30.6		
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	0.0006			
N-pentane -----	nd			
Hexanes + -----	0.0003			

## Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.67

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/28/13

## Technical Report for

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### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW18-Str

Accutest Job Number: TC25597

Sampling Date: 02/17/13

---

### Report to:

EarthCon Consultants  
4800 Sugar Grove Suite 420  
Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

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Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC25597

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter / WW18-Str

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
TC25597-1	02/17/13	08:43		02/19/13	AQ	Water	WW18-STR-021713



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25597

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/26/2013 10:52:12 AM

1 Sample was collected on 02/17/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25597. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> VE969
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

<b>Matrix</b> AQ	<b>Batch ID:</b> GSS260
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1DUP, TC25596-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used.

## Summary of Hits

Page 1 of 1

Job Number: TC25597  
Account: EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas  
Collected: 02/17/13



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25597-1	WW18-STR-021713					
Methane		1.03	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.0738	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

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Report of Analysis

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## Report of Analysis

Client Sample ID: WW18-STR-021713		Date Sampled: 02/17/13
Lab Sample ID: TC25597-1		Date Received: 02/19/13
Matrix: AQ - Water		Percent Solids: n/a
Method: SW846 8260B		
Project: Quarterly Well Sampling, Parker County, Texas		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021151.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	114%		72-122%
17060-07-0	1,2-Dichloroethane-D4	117%		68-124%
2037-26-5	Toluene-D8	111%		80-119%
460-00-4	4-Bromofluorobenzene	110%		72-126%

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	WW18-STR-021713	Date Sampled:	02/17/13
Lab Sample ID:	TC25597-1	Date Received:	02/19/13
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	RSKSOP-147/175		
Project:	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005680.D	1	02/22/13	LT	n/a	n/a	GSS260
Run #2	SS005681.D	10	02/22/13	LT	n/a	n/a	GSS260

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	1.03 <sup>a</sup>	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0738	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



Misc. Forms

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5

Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form

## CHAIN OF CUSTODY

PAGE \_\_\_\_ OF \_\_\_\_

10165 Harwin Dr, Ste 150 Houston, TX 77036  
TEL: 713-271-4700 FAX: 713-271-4770  
[www.aaculife.com](http://www.aaculife.com)

[illegible]

**TC25597: Chain of Custody**  
**Page 1 of 3**



## Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Accutest Job Number: TC25597 Client: EARTHCON Project: 4TH QTR SAMPLING  
Date / Time Received: 2/19/2013 Delivery Method: FedEx Airbill #: 800894129249  
No. Coolers: 1 Therm ID: IR6 Temp Adjustment Factor: -0.1  
Cooler Temps (Initial/Adjusted): #1: (3.8/3.5)

**Cooler Security** Y or N Y or N  
1. Custody Seals Present: ☒ ☐ 3. COC Present: ☒ ☐  
2. Custody Seals Intact: ☒ ☐ 4. Smpl Dates/Time OK: ☒ ☐

**Cooler Temperature** Y or N  
1. Temp criteria achieved: ☒ ☐  
2. Cooler temp verification:   
3. Cooler media: Ice (Bag)

**Quality Control Preservation** Y or N N/A WTB STB  
1. Trip Blank present / cooler: ☒ ☐ ☐ ☒ ☐  
2. Trip Blank listed on COC: ☐ ☒ ☐  
3. Samples preserved properly: ☒ ☐ ☐  
4. VOCs headspace free: ☒ ☐ ☐

**Sample Integrity - Documentation** Y or N  
1. Sample labels present on bottles: ☒ ☐  
2. Container labeling complete: ☒ ☐  
3. Sample container label / COC agree: ☒ ☐

**Sample Integrity - Condition** Y or N  
1. Sample recvd within HT: ☒ ☐  
2. All containers accounted for: ☒ ☐  
3. Condition of sample: Intact

**Sample Integrity - Instructions** Y or N N/A  
1. Analysis requested is clear: ☒ ☐  
2. Bottles received for unspecified tests: ☐ ☒  
3. Sufficient volume recvd for analysis: ☒ ☐  
4. Compositing instructions clear: ☐ ☐ ☒  
5. Filtering instructions clear: ☐ ☐ ☒

Comments The trip blank is listed on a separate chain-of-custody.

5.1  
5

TC25597: Chain of Custody  
Page 2 of 3



## Sample Receipt Log

Page 2 of 2

Job #: TC25597

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25597-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR1A	3.6	-0.1	3.5
1	TC25597-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR1A	3.6	-0.1	3.5
1	TC25597-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR1A	3.6	-0.1	3.5
1	TC25597-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR1A	3.6	-0.1	3.5
1	TC25597-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR1A	3.6	-0.1	3.5
1	TC25597-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR1A	3.6	-0.1	3.5

TC25597: Chain of Custody  
Page 3 of 3

## Appendix A Laboratory Data Package Cover Page

TC25597 This data package consists of

- ☒ This signature page, the laboratory review checklist, and the following reportable data:
- ☒ R1 Field chain-of-custody documentation;
- ☒ R2 Sample identification cross-reference;
- ☒ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☒ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☒ R5 Test reports/summary forms for blank samples;
- ☒ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☒ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☒ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☒ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☒ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

**Check, if applicable:** This laboratory meets an exception under 30 TAC§25.6 and was last inspection by

☐ [X] TCEQ or ☐ \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

**QA Manager**

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

2/26/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		2/26/2013			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC25597			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS280, VE989			
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION				YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER <sup>5</sup>
R1	OI	<b>CHAIN-OF-CUSTODY (C-O-C):</b>							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	<b>Sample and quality control (QC) identification</b>							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	<b>Test reports</b>							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	<b>Surrogate recovery data</b>							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	<b>Test reports/summary forms for blank samples</b>							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	<b>Laboratory control samples (LCS):</b>							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?					X		4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	<b>Analytical duplicate data</b>							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	<b>Method quantitation limits (MQLs):</b>							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration?				X			
		Are unadjusted MQLs and DCSS included in the laboratory data package?					X		2
R10	OI	<b>Other problems/anomalies</b>							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/26/2013	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25597	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS260, VE969	
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION	YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
S1	OI	<b>Initial calibration (ICAL)</b>				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	<b>Initial and continuing calibration verification (ICCV AND CCV) and continuing</b>				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	<b>Mass spectral tuning</b>				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	<b>Internal standards (IS)</b>				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	<b>Raw data (NELAC Section 5.5.10)</b>				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	<b>Dual column confirmation</b>				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	<b>Tentatively identified compounds (TICs):</b>				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	<b>Interference Check Sample (ICS) results</b>				
		Were percent recoveries within method QC limits?			X	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	<b>Method detection limit (MDL) studies</b>				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	<b>Proficiency test reports</b>				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	<b>Standards documentation</b>				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	<b>Compound/analyte identification procedures</b>				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	<b>Demonstration of analyst competency (DOC)</b>				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	<b>Verification/validation documentation for methods (NELAC Chapter 5)</b>				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	<b>Laboratory standard operating procedures (SOPs)</b>				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			GSS260, VE069
ER# <sup>1</sup>	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



GC/MS Volatiles

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QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



## Method Blank Summary

Page 1 of 1

Job Number: TC25597

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25597-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	109% 72-122%
17060-07-0	1,2-Dichloroethane-D4	111% 68-124%
2037-26-5	Toluene-D8	104% 80-119%
460-00-4	4-Bromofluorobenzene	104% 72-126%

6.1.1



## Blank Spike Summary

Page 1 of 1

Job Number: TC25597

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25597-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

## Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25597

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25597-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.



## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

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## Method Blank Summary

Page 1 of 1

Job Number: TC25597

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-MB	SS005668.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25597-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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## Blank Spike Summary

Page 1 of 1

Job Number: TC25597  
Account: PESTXST EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-BS	SS005666.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25597-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	19.4	90	68-139
74-85-1	Ethene	57.4	46.7	81	52-145
74-84-0	Ethane	43.3	39.3	91	68-131
74-98-6	Propane	60.6	51.8	85	69-131
75-28-5	Isobutane	72.5	62.2	86	72-131
106-97-8	Butane	76.6	68.3	89	66-128

\* = Outside of Control Limits.

## Matrix Spike Summary

Page 1 of 1

Job Number: TC25597

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	SS005671.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25597-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	195 <sup>b</sup>	21.5	251	-168* <sup>a</sup>	68-139
74-85-1	Ethene	1.0 U	57.4	53.3	93	52-145
74-84-0	Ethane	15.3	43.3	55.7	93	68-131
74-98-6	Propane	1.5 U	60.6	56.0	92	69-131
75-28-5	Isobutane	1.5 U	72.5	68.2	94	72-131
106-97-8	Butane	1.5 U	76.6	75.2	98	66-128

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

Job Number: TC25597

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1DUP	SS005670.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25597-1

CAS No.	Compound	TC25596-1		Q	RPD	Limits
		ug/l	DUP ug/l			
74-82-8	Methane	195 <sup>a</sup>	302	E	5	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	15.3	15.8		4	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33

(a) Result is from Run #2.

\* = Outside of Control Limits.



02/27/13

## Technical Report for

---

### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW19-Wil

Accutest Job Number: TC25600

Sampling Date: 02/16/13

---

### Report to:

EarthCon Consultants  
4800 Sugar Grove Suite 420  
Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.  
Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC25600

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter / WW19-Wil

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
TC25600-1	02/16/13	10:05		02/19/13	AQ	Water	WW19-WIL-021613



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25600

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/27/2013 11:22:20 AM

1 Sample was collected on 02/16/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25600. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> VE969
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

<b>Matrix</b> AQ	<b>Batch ID:</b> GSS261
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-1DUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

## Summary of Hits

Page 1 of 1

Job Number: TC25600

Account: EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Collected: 02/16/13



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25600-1	WW19-WIL-021613					
Methane		2.13	0.010	0.0060	mg/l	RSKSOP-147/175
Ethane		0.111	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b>	WW19-WIL-021613	<b>Date Sampled:</b>	02/16/13
<b>Lab Sample ID:</b>	TC25600-1	<b>Date Received:</b>	02/19/13
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021154.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		72-122%
17060-07-0	1,2-Dichloroethane-D4	113%		68-124%
2037-26-5	Toluene-D8	106%		80-119%
460-00-4	4-Bromofluorobenzene	106%		72-126%

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	WW19-W1L-021613	<b>Date Sampled:</b>	02/16/13
<b>Lab Sample ID:</b>	TC25600-1	<b>Date Received:</b>	02/19/13
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	RSKSOP-147/175		
<b>Project:</b>	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005694.D	1	02/25/13	LT	n/a	n/a	GSS261
Run #2	SS005695.D	20	02/25/13	LT	n/a	n/a	GSS261

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	2.13 <sup>a</sup>	0.010	0.0060	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.111	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Misc. Forms

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5

## Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form

10165 Harwin Dr, Ste 150 Houston, TX 77036  
TEL: 713-271-4700 FAX: 713-271-4770  
[www.acufest.com](http://www.acufest.com)

[illegible]

## TC25600: Chain of Custody

Page 1 of 3

Accutest Job Number: TC25600      Client: EARTHCON      Project: 4TH QTR SAMPLING  
 Date / Time Received: 2/19/2013      Delivery Method: FedEx      Airbill #'s: 800894129249  
 No. Coolers: 1      Therm ID: IR6      Temp Adjustment Factor: -0.1  
 Cooler Temps (Initial/Adjusted): #1: (3.6/3.5)

<b>Cooler Security</b>		<b>Y or N</b>		<b>Y or N</b>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Cooler Temperature</b>		<b>Y or N</b>			
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. Cooler temp verification:					
3. Cooler media:	Ice (Bag)				
<b>Quality Control Preservation</b>	<b>Y</b>	<b>or</b>	<b>N</b>	<b>N/A</b>	
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	

<b>Sample Integrity - Documentation</b>	<b>Y</b>	<b>or</b>	<b>N</b>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
<b>Sample Integrity - Condition</b>	<b>Y</b>	<b>or</b>	<b>N</b>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
3. Condition of sample:				Intact
<b>Sample Integrity - Instructions</b>	<b>Y</b>	<b>or</b>	<b>N</b>	<b>N/A</b>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments Received 6 vials with HCl. Chain-of-custody lists 3 containers.  
 The trip blank is listed on a separate chain-of-custody.

 5.1  
5

## Sample Receipt Log

Page 2 of 2

Job #: TC25600

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25600-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25600-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25600-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25600-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25600-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25600-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5

 5.1  
 5

**TC25600: Chain of Custody**
**Page 3 of 3**

# Appendix A Laboratory Data Package Cover Page

TC25600 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

**Check, if applicable:** This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or [ ] \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

## QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

2/27/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		2/27/2013			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC25600			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS281, VE969			
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION				YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) Identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?					X		4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?					X		2
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

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Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/27/2013				
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25600				
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS261, VE969				
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION	YES	NO	NA <sup>3</sup>	NR <sup>4</sup>	ER # <sup>5</sup>		
S1	OI	<b>Initial calibration (ICAL)</b>							
		Were response factors and/or relative response factors for each analyte within QC limits?	X						
		Were percent RSDs or correlation coefficient criteria met?	X						
		Was the number of standards recommended in the method used for all analytes?	X						
		Were all points generated between the lowest and highest standard used to calculate the curve?	X						
		Are ICAL data available for all instruments used?	X						
		Has the initial calibration curve been verified using an appropriate second source standard?	X						
S2	OI	<b>Initial and continuing calibration verification (ICCV AND CCV) and continuing</b>							
		Was the CCV analyzed at the method-required frequency?	X						
		Were percent differences for each analyte within the method-required QC limits?	X						
		Was the ICAL curve verified for each analyte?	X						
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X				
S3	O	<b>Mass spectral tuning</b>							
		Was the appropriate compound for the method used for tuning?	X						
		Were ion abundance data within the method-required QC limits?	X						
S4	O	<b>Internal standards (IS)</b>							
		Were IS area counts and retention times within the method-required QC limits?	X						
S5	OI	<b>Raw data (NELAC Section 5.5.10)</b>							
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X						
		Were data associated with manual integrations flagged on the raw data?	X						
S6	O	<b>Dual column confirmation</b>							
		Did dual column confirmation results meet the method-required QC?			X				
S7	O	<b>Tentatively identified compounds (TICs):</b>							
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X				
S8	I	<b>Interference Check Sample (ICS) results</b>							
		Were percent recoveries within method QC limits?			X				
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>							
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X				
S10	OI	<b>Method detection limit (MDL) studies</b>							
		Was a MDL study performed for each reported analyte?	X						
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				5		
S11	OI	<b>Proficiency test reports</b>							
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X						
S12	OI	<b>Standards documentation</b>							
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X						
S13	OI	<b>Compound/analyte identification procedures</b>							
		Are the procedures for compound/analyte identification documented?	X						
S14	OI	<b>Demonstration of analyst competency (DOC)</b>							
		Was DOC conducted consistent with NELAC Chapter 5?	X						
		Is documentation of the analyst's competency up-to-date and on file?	X						
S15	OI	<b>Verification/validation documentation for methods (NELAC Chapter 5)</b>							
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X						
S16	OI	<b>Laboratory standard operating procedures (SOPs)</b>							
		Are laboratory SOPs current and on file for each method performed?	X						

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:	Accutest Gulf Coast	LRC Date:	2/27/2013
Project Name:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC25600
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GSS261, VE969
ER# <sup>1</sup>	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

## GC/MS Volatiles

---

## QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



## Method Blank Summary

Page 1 of 1

Job Number: TC25600  
Account: PESTXST EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25600-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	111%	68-124%
2037-26-5	Toluene-D8	104%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

6.1.1

6

## Blank Spike Summary

Page 1 of 1

Job Number: TC25600

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25600-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25600

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25600-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.

## GC Volatiles

---

## QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25600

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25600-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

7

## Blank Spike Summary

Page 1 of 1

Job Number: TC25600

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25600-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128

\* = Outside of Control Limits.

## Matrix Spike Summary

Page 1 of 1

Job Number: TC25600

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25600-1

CAS No.	Compound	TC25606-1 ug/l	Spike Q ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	1490 <sup>b</sup>	21.5	1520	249* <sup>a</sup>	68-139
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145
74-84-0	Ethane	104	43.3	137	75	68-131
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131
75-28-5	Isobutane	1.5 U	72.5	52.8	73	72-131
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

Job Number: TC25600

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/I75

TC25600-1

CAS No.	Compound	TC25599-1		Q	RPD	Limits
		ug/l	DUP ug/l			
74-82-8	Methane	5.72	8.04		34	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	1.0 U	ND		nc	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33

\* = Outside of Control Limits.

Lab #: 336582 Job #: 20733  
 Sample Name/Number: WW19-WIL-021613  
 Company: Oil Tracers, LLC  
 Date Sampled: 2/16/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: Fourth Quarter Well Sampling  
 Location: Parker County, TX  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.30			
Oxygen -----	0.095			
Nitrogen -----	71.35			
Carbon Dioxide -----	0.24			
Methane -----	26.33	-43.86	-157.7	
Ethane -----	0.684	-21.5		
Ethylene -----	nd			
Propane -----	0.0004			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	0.0004			
N-pentane -----	nd			
Hexanes + -----	nd			

## Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.71

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

## Technical Report for

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### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW20-Huf

Accutest Job Number: TC25595

Sampling Date: 02/16/13

---

### Report to:

EarthCon Consultants  
4800 Sugar Grove Suite 420  
Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

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Test results relate only to samples analyzed.

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Accutest Laboratories

**Sample Summary**

EarthCon Consultants

Job No: TC25595

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter / WW20-Huf

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC25595-1	02/16/13	13:35	02/19/13	AQ Water	WW20-HUF-021613



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25595

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/26/2013 10:44:14 AM

1 Sample was collected on 02/16/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25595. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> VE969
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-IMS, TC25596-IMSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

<b>Matrix</b> AQ	<b>Batch ID:</b> GSS260
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-IDUP, TC25596-IMS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

## Summary of Hits

Page 1 of 1

Job Number: TC25595  
Account: EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas  
Collected: 02/16/13



Lab Sample ID	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25595-1	WW20-HUF-021613					
Methane		0.654	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.00793	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

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Report of Analysis

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## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	WW20-HUF-021613	<b>Date Sampled:</b>	02/16/13
<b>Lab Sample ID:</b>	TC25595-1	<b>Date Received:</b>	02/19/13
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021146.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		72-122%
17060-07-0	1,2-Dichloroethane-D4	113%		68-124%
2037-26-5	Toluene-D8	107%		80-119%
460-00-4	4-Bromofluorobenzene	106%		72-126%

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	WW20-HUF-021613	<b>Date Sampled:</b>	02/16/13
<b>Lab Sample ID:</b>	TC25595-1	<b>Date Received:</b>	02/19/13
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	RSKSOP-147/175		
<b>Project:</b>	Quarterly Well Sampling, Parker County, Texas		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005678.D	1	02/22/13	LT	n/a	n/a	GSS260
Run #2	SS005679.D	10	02/22/13	LT	n/a	n/a	GSS260

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.654 <sup>a</sup>	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.00793	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Misc. Forms

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5

## Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form

10165 Harwin Dr, Ste 150 Houston, TX 77036  
TEL: 713-271-4700 FAX: 713-271-4770  
[www.acculast.com](http://www.acculast.com)

10165 Harwin Dr, Ste 150 Houston, TX 77036  
TEL: 713-271-4700 FAX: 713-271-4770  
www.accutest.com

FED-EX Tracking #

Accutest Quote #

Bottle Order Control #

Accutest Job #

**Cient / Reporting Information**

Company Name  
EarthCon Consultants, Inc.

Street Address  
4800 Sugar Grove Blvd., Suite 390

City State Zip  
Stafford TX 77477

Project Contact  
Gabriela Floreslovo

Phone # 281-201-3513

Sample(s) Name(s)  
J8 / B / RM

**Project Information**

Project Name  
Fourth Quarterly Well Sampling, Parker County, Texas

Street

Billing Information (if different from Report to)  
Company Name

Project #

Client Purchase Order #

Project Manager

**Requested Analyses**

Matrix Codes

DW - Drinking Water  
GW - Ground Water  
WW - Wastewater  
SW - Surface Water  
SO - Soil  
SL - Sludge  
SED - Sediment  
OI - Oil  
LIQ - Other Liquid  
AIR - Air  
SOL - Other Solid  
WP - Wipe  
FB - Field Blank

**Collection**

Date Time

Sampled By

Matrix

# of bottles

Number of preserved bottles

Collection

Number of preserved bottles

**Field ID / Point of Collection**

Field ID / Point of Collection

Field ID / Point of Collection

**Turnaround Time (Business days)**

Standard

5 Day RUSH

4 Day RUSH

3 Day RUSH

2 Day RUSH

1 Day EMERGENCY

Emergency & Rush T/A data available VIA LabLink

**Approved By (Accutest PM): / Date:**

Approved By (Accutest PM): / Date:

**Data Deliverable Information**

Commercial "A" (Level 1)

Commercial "B" (Level 2)

FULT1 (Level 3+4)

REDT1 (Level 3+4)

Commercial "C"

TRRP

EDD Format

Other

**Comments / Special Instructions**

Packed in 2 Coolers

**Sample Custody must be documented below each time samples change possession, including courier delivery.**

Relinquished By: 1

Received By: 2

Relinquished By: 3

Received By: 4

Relinquished By: 5

Received By: 6

**Custody Seal #**

Intact

Not Intact

Preserved where applicable

On Ice

Cooler Temp.

**TC25595: Chain of Custody**  
**Page 1 of 3**

Accutest Job Number: TC25595      Client: EARTHCON      Project: 4TH QTR SAMPLING  
 Date / Time Received: 2/19/2013      Delivery Method: FedEx      Airbill #'s: 800894129249  
 No. Coolers: 1      Therm ID: IR6      Temp Adjustment Factor: -0.1  
 Cooler Temps (Initial/Adjusted): #1: (3.6/3.5)

**Cooler Security**
**Y or N**

1. Custody Seals Present: ☒ ☐      3. COC Present: ☒ ☐  
 2. Custody Seals Intact: ☒ ☐      4. Smpl Dates/Time OK: ☒ ☐

**Cooler Temperature**
**Y or N**

1. Temp criteria achieved: ☒ ☐  
 2. Cooler temp verification: \_\_\_\_\_  
 3. Cooler media: Ice (Bag)

**Quality Control Preservation**
**Y or N**
**N/A**
**WTB STB**

1. Trip Blank present / cooler: ☒ ☐ ☐      ☒ ☐  
 2. Trip Blank listed on COC: ☐ ☒ ☐  
 3. Samples preserved properly: ☒ ☐ ☐  
 4. VOCs headspace free: ☒ ☐ ☐

**Sample Integrity - Documentation**
**Y or N**

1. Sample labels present on bottles: ☒ ☐  
 2. Container labeling complete: ☒ ☐  
 3. Sample container label / COC agree: ☒ ☐

**Sample Integrity - Condition**
**Y or N**

1. Sample recvd within HT: ☒ ☐  
 2. All containers accounted for: ☒ ☐  
 3. Condition of sample: Intact

**Sample Integrity - Instructions**
**Y or N N/A**

1. Analysis requested is clear: ☒ ☐  
 2. Bottles received for unspecified tests: ☐ ☒  
 3. Sufficient volume recvd for analysis: ☒ ☐  
 4. Compositing instructions clear: ☐ ☐ ☒  
 5. Filtering instructions clear: ☐ ☐ ☒

Comments The trip blank is listed on a separate chain-of-custody.

 5.1  
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# Sample Receipt Log

Page 2 of 2

Job #: TC25595

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25595-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25595-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25595-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25595-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25595-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25595-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5

 5.1  
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**TC25595: Chain of Custody**
**Page 3 of 3**

# Appendix A Laboratory Data Package Cover Page

TC25595 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

**Check, if applicable:** This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEO or ☐ \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

**QA Manager**

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

2/26/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		2/26/2013			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC25595			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GS3260, VE969			
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION				YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?						X	4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?						X	2
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

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Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/26/2013				
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25595				
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS260, VE969				
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION	YES	NO	NA <sup>3</sup>	NR <sup>4</sup>	ER # <sup>5</sup>		
S1	OI	<b>Initial calibration (ICAL)</b>							
		Were response factors and/or relative response factors for each analyte within QC limits?	X						
		Were percent RSDs or correlation coefficient criteria met?	X						
		Was the number of standards recommended in the method used for all analytes?	X						
		Were all points generated between the lowest and highest standard used to calculate the curve?	X						
		Are ICAL data available for all instruments used?	X						
		Has the initial calibration curve been verified using an appropriate second source standard?	X						
S2	OI	<b>Initial and continuing calibration verification (ICCV AND CCV) and continuing</b>							
		Was the CCV analyzed at the method-required frequency?	X						
		Were percent differences for each analyte within the method-required QC limits?	X						
		Was the ICAL curve verified for each analyte?	X						
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X				
S3	O	<b>Mass spectral tuning</b>							
		Was the appropriate compound for the method used for tuning?	X						
		Were ion abundance data within the method-required QC limits?	X						
S4	O	<b>Internal standards (IS)</b>							
		Were IS area counts and retention times within the method-required QC limits?	X						
S5	OI	<b>Raw data (NELAC Section 5.5.10)</b>							
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X						
		Were data associated with manual integrations flagged on the raw data?	X						
S6	O	<b>Dual column confirmation</b>							
		Did dual column confirmation results meet the method-required QC?			X				
S7	O	<b>Tentatively identified compounds (TICs):</b>							
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X				
S8	I	<b>Interference Check Sample (ICS) results</b>							
		Were percent recoveries within method QC limits?			X				
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>							
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X				
S10	OI	<b>Method detection limit (MDL) studies</b>							
		Was a MDL study performed for each reported analyte?	X						
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				5		
S11	OI	<b>Proficiency test reports</b>							
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X						
S12	OI	<b>Standards documentation</b>							
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X						
S13	OI	<b>Compound/analyte identification procedures</b>							
		Are the procedures for compound/analyte identification documented?	X						
S14	OI	<b>Demonstration of analyst competency (DOC)</b>							
		Was DOC conducted consistent with NELAC Chapter 5?	X						
		Is documentation of the analyst's competency up-to-date and on file?	X						
S15	OI	<b>Verification/validation documentation for methods (NELAC Chapter 5)</b>							
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X						
S16	OI	<b>Laboratory standard operating procedures (SOPs)</b>							
		Are laboratory SOPs current and on file for each method performed?	X						

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			GSS260, VE969
ER#	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



## Method Blank Summary

Page 1 of 1

Job Number: TC25595  
Account: PESTXST EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25595-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	111%	68-124%
2037-26-5	Toluene-D8	104%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

## Blank Spike Summary

Page 1 of 1

Job Number: TC25595

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25595-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25595

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25595-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.

## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25595

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-MB	SS005668.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25595-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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## Blank Spike Summary

Page 1 of 1

Job Number: TC25595

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-BS	SS005666.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25595-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	19.4	90	68-139
74-85-1	Ethene	57.4	46.7	81	52-145
74-84-0	Ethane	43.3	39.3	91	68-131
74-98-6	Propane	60.6	51.8	85	69-131
75-28-5	Isobutane	72.5	62.2	86	72-131
106-97-8	Butane	76.6	68.3	89	66-128

\* = Outside of Control Limits.

# Matrix Spike Summary

Page 1 of 1

Job Number: TC25595  
Account: PESTXST EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	SS005671.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25595-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	195 <sup>b</sup>	21.5	251	-168* <sup>a</sup>	68-139
74-85-1	Ethene	1.0 U	57.4	53.3	93	52-145
74-84-0	Ethane	15.3	43.3	55.7	93	68-131
74-98-6	Propane	1.5 U	60.6	56.0	92	69-131
75-28-5	Isobutane	1.5 U	72.5	68.2	94	72-131
106-97-8	Butane	1.5 U	76.6	75.2	98	66-128

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

Job Number: TC25595

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1DUP	SS005670.D	I	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	I	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25595-1

CAS No.	Compound	TC25596-1 ug/l	DUP Q ug/l	Q	RPD	Limits
74-82-8	Methane	195 <sup>a</sup>	302	E	5	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	15.3	15.8		4	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33

(a) Result is from Run #2.

\* = Outside of Control Limits.

Lab #: 336583 Job #: 20733  
 Sample Name/Number: WW20-HUF-021613  
 Company: Oil Tracers, LLC  
 Date Sampled: 2/16/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: Fourth Quarter Well Sampling  
 Location: Parker County, TX  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.54			
Oxygen -----	0.13			
Nitrogen -----	87.17			
Carbon Dioxide -----	0.17			
Methane -----	10.96	-44.68	-126.3	
Ethane -----	0.0320			
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	nd			

## Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.71

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/27/13

## Technical Report for

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### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW21-Van

Accutest Job Number: TC25609

Sampling Date: 02/15/13

---

### Report to:

EarthCon Consultants  
4800 Sugar Grove Suite 420  
Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

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Test results relate only to samples analyzed.

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## Sample Summary

EarthCon Consultants

Job No: TC25609

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter / WW21-Van

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC25609-1	02/15/13	15:54	02/19/13	AQ Water	WW21-VAN-021513



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25609

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/27/2013 11:02:58 AM

1 Sample was collected on 02/15/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.2 Deg C. The sample received an Accutest job number of TC25609. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

Matrix	AQ	Batch ID:	VE969
--------	----	-----------	-------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-IMS, TC25596-IMSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

Matrix	AQ	Batch ID:	GSS262
--------	----	-----------	--------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25609-IDUP, TC25610-IMS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane, Ethane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

## Summary of Hits

Page 1 of 1

Job Number: TC25609

Account: EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Collected: 02/15/13



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25609-1	WW21-VAN-021513					
Methane		0.00077	0.00050	0.00030	mg/l	RSKSOP-147/175

Sample Results

---

Report of Analysis

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## Report of Analysis

Page 1 of 1

Client Sample ID: WW21-VAN-021513  
 Lab Sample ID: TC25609-1  
 Matrix: AQ - Water  
 Method: SW846 8260B  
 Project: Quarterly Well Sampling, Parker County, Texas

Date Sampled: 02/15/13  
 Date Received: 02/19/13  
 Percent Solids: n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021163.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		72-122%
17060-07-0	1,2-Dichloroethane-D4	115%		68-124%
2037-26-5	Toluene-D8	107%		80-119%
460-00-4	4-Bromofluorobenzene	108%		72-126%

U = Not detected      SDL - Sample Detection Limit  
 MQL = Method Quantitation Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Page 1 of 1

Client Sample ID:	WW21-VAN-021513	Date Sampled:	02/15/13
Lab Sample ID:	TC25609-1	Date Received:	02/19/13
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	RSKSOP-147/175		
Project:	Quarterly Well Sampling, Parker County, Texas		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005724.D	1	02/26/13	LT	n/a	n/a	GSS262
Run #2							

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.00077	0.00050	0.00030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.00050 U	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Misc. Forms

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5

## Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form



Accutest Job Number: TC25609      Client: EARTHCON      Project: 4TH QTR SAMPLING  
 Date / Time Received: 2/19/2013      Delivery Method: FedEx      Airbill #'s: 800894129249  
 No. Coolers: 1      Therm ID: IR6      Temp Adjustment Factor: -0.1  
 Cooler Temps (Initial/Adjusted): #1: (3.3/3.2)

**Cooler Security**
**Y or N**

1. Custody Seals Present: ☒ ☐  
 2. Custody Seals Intact: ☒ ☐

**Y or N**

3. COC Present: ☒ ☐  
 4. Smpl Dates/Time OK: ☒ ☐

**Cooler Temperature**
**Y or N**

1. Temp criteria achieved: ☒ ☐  
 2. Cooler temp verification: \_\_\_\_\_  
 3. Cooler media: Ice (Bag)

**Quality Control Preservation**
**Y or N**
**N/A**

1. Trip Blank present / cooler: ☒ ☐ ☐  
 2. Trip Blank listed on COC: ☐ ☒ ☐  
 3. Samples preserved properly: ☒ ☐ ☐  
 4. VOCs headspace free: ☒ ☐ ☐

**WTB STB**
☒ ☐
**Sample Integrity - Documentation**
**Y or N**

1. Sample labels present on bottles: ☒ ☐  
 2. Container labeling complete: ☒ ☐  
 3. Sample container label / COC agree: ☒ ☐

**Sample Integrity - Condition**
**Y or N**

1. Sample recvd within HT: ☒ ☐  
 2. All containers accounted for: ☒ ☐  
 3. Condition of sample: Intact

**Sample Integrity - Instructions**
**Y or N**
**N/A**

1. Analysis requested is clear: ☒ ☐  
 2. Bottles received for unspecified tests: ☐ ☒  
 3. Sufficient volume recvd for analysis: ☒ ☐  
 4. Compositing instructions clear: ☐ ☐ ☒  
 5. Filtering instructions clear: ☐ ☐ ☒

Comments The trip blank is listed on a separate chain-of-custody.

 5.1  
5

**TC25609: Chain of Custody**  
**Page 2 of 3**

## Sample Receipt Log

Page 2 of 2

Job #: TC25609

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25609-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25609-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25609-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25609-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25609-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25609-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2

 5.1  
 5

**TC25609: Chain of Custody**
**Page 3 of 3**

# Appendix A Laboratory Data Package Cover Page

TC25609 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.


The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

**Check, if applicable:** This laboratory meets an exception under 30 TAC§25.6 and was last inspection by

☐ [X] TCEQ or ☐ \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

## QA Manager

Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez		Laboratory Director	2/27/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		2/27/2013			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC25809			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS282, VE989			
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION				YES   NO   NA <sup>3</sup>   NR <sup>4</sup>   ER # <sup>5</sup>			
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) Identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?						X	4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSSs included in the laboratory data package?					X		2
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/27/2013	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25609	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS262, VE969	
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION	YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
S1	OI	<b>Initial calibration (ICAL)</b>				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	<b>Initial and continuing calibration verification (ICCV AND CCV) and continuing</b>				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	<b>Mass spectral tuning</b>				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	<b>Internal standards (IS)</b>				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	<b>Raw data (NELAC Section 5.5.10)</b>				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	<b>Dual column confirmation</b>				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	<b>Tentatively identified compounds (TICs):</b>				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	<b>Interference Check Sample (ICS) results</b>				
		Were percent recoveries within method QC limits?			X	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	<b>Method detection limit (MDL) studies</b>				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	<b>Proficiency test reports</b>				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	<b>Standards documentation</b>				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	<b>Compound/analyte identification procedures</b>				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	<b>Demonstration of analyst competency (DOC)</b>				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	<b>Verification/validation documentation for methods (NELAC Chapter 5)</b>				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	<b>Laboratory standard operating procedures (SOPs)</b>				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:	Accutest Gulf Coast	LRC Date:	2/27/2013
Project Name:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC25609
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GSS262, VE969
ER# <sup>1</sup>	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

<sup>1</sup>ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



## Method Blank Summary

Page 1 of 1

Job Number: TC25609

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25609-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	109% 72-122%
17060-07-0	1,2-Dichloroethane-D4	111% 68-124%
2037-26-5	Toluene-D8	104% 80-119%
460-00-4	4-Bromofluorobenzene	104% 72-126%

6.1.1

6

## Blank Spike Summary

Page 1 of 1

Job Number: TC25609

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25609-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25609

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25609-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.

## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25609

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS262-MB	SS005721.D	1	02/26/13	LT	n/a	n/a	GSS262

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25609-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

7

## Blank Spike Summary

Page 1 of 1

Job Number: TC25609

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS262-BS	SS005718.D	1	02/26/13	LT	n/a	n/a	GSS262

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25609-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	18.1	84	68-139
74-85-1	Ethene	57.4	46.0	80	52-145
74-84-0	Ethane	43.3	38.9	90	68-131
74-98-6	Propane	60.6	52.4	86	69-131
75-28-5	Isobutane	72.5	64.2	89	72-131
106-97-8	Butane	76.6	70.1	92	66-128

\* = Outside of Control Limits.

## Matrix Spike Summary

Page 1 of 1

Job Number: TC25609

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25610-1MS	SS005727.D	1	02/26/13	LT	n/a	n/a	GSS262
TC25610-1	SS005726.D	1	02/26/13	LT	n/a	n/a	GSS262
TC25610-1	SS005729.D	10	02/26/13	LT	n/a	n/a	GSS262

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25609-1

CAS No.	Compound	TC25610-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	1610 <sup>b</sup>	21.5	1100	-2162*	<sup>a</sup> 68-139
74-85-1	Ethene	1.0 U	57.4	63.8	111	52-145
74-84-0	Ethane	117	43.3	144	62* <sup>a</sup>	68-131
74-98-6	Propane	1.5 U	60.6	60.1	99	69-131
75-28-5	Isobutane	1.5 U	72.5	73.7	102	72-131
106-97-8	Butane	1.5 U	76.6	80.3	105	66-128

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

Job Number: TC25609

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25609-1DUP	SS005725.D	1	02/26/13	LT	n/a	n/a	GSS262
TC25609-1	SS005724.D	1	02/26/13	LT	n/a	n/a	GSS262

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25609-1

CAS No.	Compound	TC25609-1		DUP		RPD	Limits
		ug/l	Q	ug/l	Q		
74-82-8	Methane	0.77		0.69		11	53
74-85-1	Ethene	1.0 U		ND		nc	27
74-84-0	Ethane	1.0 U		ND		nc	43
74-98-6	Propane	1.5 U		ND		nc	21
75-28-5	Isobutane	1.5 U		ND		nc	35
106-97-8	Butane	1.5 U		ND		nc	33

\* = Outside of Control Limits.

Lab #: 336580 Job #: 20733  
 Sample Name/Number: WW21-VAN-021513  
 Company: Oil Tracers, LLC  
 Date Sampled: 2/15/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: Fourth Quarter Well Sampling  
 Location: Parker County, TX  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.64			
Oxygen -----	12.22			
Nitrogen -----	84.85			
Carbon Dioxide -----	1.28			
Methane -----	0.0149			
Ethane -----	nd			
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	nd			

## Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.75

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/27/13

## Technical Report for

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### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW22-Sim

Accutest Job Number: TC25606

Sampling Date: 02/15/13

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### Report to:

EarthCon Consultants  
4800 Sugar Grove Suite 420  
Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.  
Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC25606

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter / WW22-Sim

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC25606-1	02/15/13	10:40	02/19/13	AQ Water	WW22-SIM-021513



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25606

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/27/2013 11:47:30 AM

1 Sample was collected on 02/15/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.2 Deg C. The sample received an Accutest job number of TC25606. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> VE969
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-IMS, TC25596-IMSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

<b>Matrix</b> AQ	<b>Batch ID:</b> GSS261
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-IDUP, TC25606-IMS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

## Summary of Hits

Page 1 of 1

Job Number: TC25606  
Account: EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas  
Collected: 02/15/13



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25606-1	WW22-SIM-021513					
Methane		1.49	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.104	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b>	WW22-SIM-021513	<b>Date Sampled:</b>	02/15/13
<b>Lab Sample ID:</b>	TC25606-1	<b>Date Received:</b>	02/19/13
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021160.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		72-122%
17060-07-0	1,2-Dichloroethane-D4	113%		68-124%
2037-26-5	Toluene-D8	106%		80-119%
460-00-4	4-Bromofluorobenzene	106%		72-126%

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	WW22-SIM-021513						
Lab Sample ID:	TC25606-1				Date Sampled:	02/15/13	
Matrix:	AQ - Water				Date Received:	02/19/13	
Method:	RSKSOP-147/175				Percent Solids:	n/a	
Project:	Quarterly Well Sampling, Parker County, Texas						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
Run #2	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	1.49 <sup>a</sup>	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.104	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form



## CHAIN OF CUSTODY

PAGE 1 OF 1

10165 Harwin Dr, Ste 150 Houston, TX 77036  
TEL: 713-271-4700 FAX: 713-271-4770  
www.accutest.com

FED-EX Tracking #	Bottle Order Control #
Accutest Quota #	Accutest Job # <b>TC25606</b>
Requested Analyses	
Matrix Codes	
DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SD - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank	
LAB USE ONLY	

Client / Reporting Information		Project Information	
Company Name <b>EarthCon Consultants, Inc.</b>		Project Name <b>Fourth Quarterly Well Sampling, Parker County, Texas</b>	
Street Address <b>4800 Sugar Grove Blvd., Suite 390</b>		Street	
City <b>Stafford TX 77477</b>		Billing Information (if different from Report to)	
State		Company Name	
Zip		Street Address	
Project Contact <b>Gabriela Floreslovo</b>		Project #	
Phone # <b>281-201-3513</b>		Client Purchase Order #	
Fax #		City	
Sampler(s) Name(s) <b>JA/SH/RM</b>		State	
Phone #		Zip	
Project Manager		Attention:	
Collection		Number of preserved bottles	
Accutest Sample #	Field ID / Point of Collection	Date	Time
1	<b>WW22-3PM-021513</b>	<b>2/15/13</b>	<b>1046</b>
		Sampled By	Matrix
		<b>JA</b>	<b>DW 6</b>
		# of bottles	
		<b>6</b>	
		HC	HC
		<b>K</b>	
		2-MINCH	2-MINCH
		HH3	HH3
		HH3A	HH3A
		HH3B	HH3B
		HH3C	HH3C
		HH3D	HH3D
		HH3E	HH3E
		HH3F	HH3F
		HH3G	HH3G
		HH3H	HH3H
		HH3I	HH3I
		HH3J	HH3J
		HH3K	HH3K
		HH3L	HH3L
		HH3M	HH3M
		HH3N	HH3N
		HH3O	HH3O
		HH3P	HH3P
		HH3Q	HH3Q
		HH3R	HH3R
		HH3S	HH3S
		HH3T	HH3T
		HH3U	HH3U
		HH3V	HH3V
		HH3W	HH3W
		HH3X	HH3X
		HH3Y	HH3Y
		HH3Z	HH3Z
		HH3AA	HH3AA
		HH3AB	HH3AB
		HH3AC	HH3AC
		HH3AD	HH3AD
		HH3AE	HH3AE
		HH3AF	HH3AF
		HH3AG	HH3AG
		HH3AH	HH3AH
		HH3AI	HH3AI
		HH3AJ	HH3AJ
		HH3AK	HH3AK
		HH3AL	HH3AL
		HH3AM	HH3AM
		HH3AN	HH3AN
		HH3AO	HH3AO
		HH3AP	HH3AP
		HH3AQ	HH3AQ
		HH3AR	HH3AR
		HH3AS	HH3AS
		HH3AT	HH3AT
		HH3AU	HH3AU
		HH3AV	HH3AV
		HH3AW	HH3AW
		HH3AX	HH3AX
		HH3AY	HH3AY
		HH3AZ	HH3AZ
		HH3BA	HH3BA
		HH3BB	HH3BB
		HH3BC	HH3BC
		HH3BD	HH3BD
		HH3BE	HH3BE
		HH3BF	HH3BF
		HH3BG	HH3BG
		HH3BH	HH3BH
		HH3BI	HH3BI
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		HH3BS	HH3BS
		HH3BT	HH3BT
		HH3BU	HH3BU
		HH3BV	HH3BV
		HH3BW	HH3BW
		HH3BX	HH3BX
		HH3BY	HH3BY
		HH3BZ	HH3BZ
		HH3CA	HH3CA
		HH3CB	HH3CB
		HH3CC	HH3CC
		HH3CD	HH3CD
		HH3CE	HH3CE
		HH3CF	HH3CF
		HH3CG	HH3CG
		HH3CH	HH3CH
		HH3CI	HH3CI
		HH3CJ	HH3CJ
		HH3CK	HH3CK
		HH3CL	HH3CL
		HH3CM	HH3CM
		HH3CN	HH3CN
		HH3CO	HH3CO
		HH3CP	HH3CP
		HH3CQ	HH3CQ
		HH3CR	HH3CR
		HH3CS	HH3CS
		HH3CT	HH3CT
		HH3CU	HH3CU
		HH3CV	HH3CV
		HH3CW	HH3CW
		HH3CX	HH3CX
		HH3CY	HH3CY
		HH3CZ	HH3CZ
		HH3DA	HH3DA
		HH3DB	HH3DB
		HH3DC	HH3DC
		HH3DD	HH3DD
		HH3DE	HH3DE
		HH3DF	HH3DF
		HH3DG	HH3DG
		HH3DH	HH3DH
		HH3DI	HH3DI
		HH3DJ	HH3DJ
		HH3DK	HH3DK
		HH3DL	HH3DL
		HH3DM	HH3DM
		HH3DN	HH3DN
		HH3DO	HH3DO
		HH3DP	HH3DP
		HH3DQ	HH3DQ
		HH3DR	HH3DR
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		HH3DU	HH3DU
		HH3DV	HH3DV
		HH3DW	HH3DW
		HH3DX	HH3DX
		HH3DY	HH3DY
		HH3DZ	HH3DZ
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		HH3FF	HH3FF
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		HH3FR	HH3FR
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		HH3FT	HH3FT
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		HH3FV	HH3FV
		HH3FW	HH3FW
		HH3FX	HH3FX
		HH3FY	HH3FY
		HH3FZ	HH3FZ
		HH3GA	HH3GA
		HH3GB	HH3GB
		HH3GC	HH3GC
		HH3GD	HH3GD
		HH3GE	HH3GE
		HH3GF	HH3GF
		HH3GG	HH3GG
		HH3GH	HH3GH
		HH3GI	HH3GI
		HH3GJ	HH3GJ
		HH3GK	HH3GK
		HH3GL	HH3GL
		HH3GM	HH3GM
		HH3GN	HH3GN
		HH3GO	HH3GO
		HH3GP	HH3GP
		HH3GQ	HH3GQ
		HH3GR	HH3GR
		HH3GS	HH3GS
		HH3GT	HH3GT
		HH3GU	HH3GU
		HH3GV	HH3GV
		HH3GW	HH3GW
		HH3GX	HH3GX
		HH3GY	HH3GY
		HH3GZ	HH3GZ
		HH3HA	HH3HA
		HH3HB	HH3HB
		HH3HC	HH3HC
		HH3HD	HH3HD
		HH3HE	HH3HE
		HH3HF	HH3HF
		HH3HG	HH3HG
		HH3HH	HH3HH
		HH3HI	HH3HI
		HH3HJ	HH3HJ
		HH3HK	HH3HK
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		HH3HM	HH3HM
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		HH3HO	HH3HO
		HH3HP	HH3HP
		HH3HQ	HH3HQ
		HH3HR	HH3HR
		HH3HS	HH3HS
		HH3HT	HH3HT
		HH3HU	HH3HU
		HH3HV	HH3HV
		HH3HW	HH3HW
		HH3HX	HH3HX
		HH3HY	HH3HY
		HH3HZ	HH3HZ
		HH3IA	HH3IA
		HH3IB	HH3IB
		HH3IC	HH3IC
		HH3ID	HH3ID
		HH3IE	HH3IE
		HH3IF	HH3IF
		HH3IG	HH3IG
		HH3IH	HH3IH
		HH3IJ	HH3IJ
		HH3IK	HH3IK
		HH3IL	HH3IL
		HH3IM	HH3IM
		HH3IN	HH3IN
		HH3IO	HH3IO
		HH3IP	HH3IP
		HH3IQ	HH3IQ
		HH3IR	HH3IR
		HH3IS	HH3IS
		HH3IT	HH3IT
		HH3IU	HH3IU
		HH3IV	HH3IV
		HH3IW	HH3IW
		HH3IX	HH3IX
		HH3IY	HH3IY
		HH3IZ	HH3IZ
		HH3JA	HH3JA
		HH3JB	HH3JB
		HH3JC	HH3JC
		HH3JD	HH3JD
		HH3JE	HH3JE
		HH3JF	HH3JF
		HH3JG	HH3JG
		HH3JH	HH3JH
		HH3JI	HH3JI
		HH3JJ	HH3JJ
		HH3JK	HH3JK
		HH3JL	HH3JL
		HH3JM	HH3JM
		HH3JN	HH3JN
		HH3JO	HH3JO
		HH3JP	HH3JP
		HH3JQ	HH3JQ
		HH3JR	HH3JR
		HH3JS	HH3JS
		HH3JT	HH3JT
		HH3JU	HH3JU
		HH3JV	HH3JV
		HH3JW	HH3JW
		HH3JX	HH3JX
		HH3JY	HH3JY
		HH3JZ	HH3JZ
		HH3KA	HH3KA
		HH3KB	HH3KB
		HH3KC	HH3KC
		HH3KD	HH3KD
		HH3KE	HH3KE
		HH3KF	HH3KF
		HH3KG	HH3KG
		HH3KH	HH3KH
		HH3KI	HH3KI
		HH3KJ	HH3KJ
		HH3KK	HH3KK
		HH3KL	HH3KL
		HH3KM	HH3KM
		HH3KN	HH3KN
		HH3KO	HH3KO
		HH3KP	HH3KP
		HH3KQ	HH3KQ
		HH3KR	HH3KR
		HH3KS	HH3KS
		HH3KT	HH3KT
		HH3KU	HH3KU
		HH3KV	HH3KV
		HH3KW	HH3KW
		HH3KX	HH3KX
		HH3KY	HH3KY
		HH3KZ	HH3KZ
		HH3LA	HH3LA
		HH3LB	HH3LB
		HH3LC	HH3LC
		HH3LD	HH3LD
		HH3LE	HH3LE
		HH3LF	HH3LF
		HH3LG	HH3LG
		HH3LH	HH3LH
		HH3LI	HH3LI
		HH3LJ	HH3LJ
		HH3LK	HH3LK
		HH3LL	HH3LL
		HH3LM	HH3LM
		HH3LN	HH3LN
		HH3LO	HH3LO
		HH3LP	HH3LP
		HH3LQ	HH3LQ
		HH3LR	HH3LR
		HH3LS	HH3LS
		HH3LT	HH3LT
		HH3LU	HH3LU
		HH3LV	HH3LV
		HH3LW	HH3LW
		HH3LX	HH3LX
		HH3LY	HH3LY
		HH3LZ	HH3LZ
		HH3MA	HH3MA
		HH3MB	HH3MB
		HH3MC	HH3MC
		HH3MD	HH3MD
		HH3ME	HH3ME
		HH3MF	HH3MF
		HH3MG	HH3MG
		HH3MH	HH3MH
		HH3MI	HH3MI
		HH3MJ	HH3MJ
		HH3MK	HH3MK
		HH3ML	HH3ML
		HH3MM	HH3MM
		HH3MN	HH3MN
		HH3MO	HH3MO
		HH3MP	HH3MP
		HH3MQ	HH3MQ
		HH3MR	HH3MR
		HH3MS	HH3MS
		HH3MT	HH3MT
		HH3MU	HH3MU
		HH3MV	HH3MV
		HH3MW	HH3MW
		HH3MX	HH3MX
		HH3MY	HH3MY
		HH3MZ	HH3MZ
		HH3NA	HH3NA
		HH3NB	HH3NB
		HH3NC	HH3NC
		HH3ND	HH3ND
		HH3NE	HH3NE
		HH3NF	HH3NF
		HH3NG	HH3NG
		HH3NH	HH3NH
		HH3NI	HH3NI
		HH3NJ	HH3NJ
		HH3NK	HH3NK
		HH3NL	HH3NL
		HH3NM	HH3NM
		HH3NN	HH3NN
		HH3NO	HH3NO
		HH3NP	HH3NP
		HH3NQ	HH3NQ
		HH3NR	HH3NR
		HH3NS	HH3NS
		HH3NT	HH3NT
		HH3NU	HH3NU
		HH3NV	HH3NV
		HH3NW	HH3NW
		HH3NX	HH3NX
		HH3NY	HH3NY
		HH3NZ	HH3NZ
		HH3OA	HH3OA
		HH3OB	HH3OB
		HH3OC	HH3OC
		HH3OD	HH3OD
		HH3OE	HH3OE
		HH3OF	HH3OF
		HH3OG	HH3OG
		HH3OH	HH3OH

Accutest Job Number: TC25606      Client: EARTHCON      Project: 4TH QTR SAMPLING  
 Date / Time Received: 2/19/2013      Delivery Method: FedEx      Airbill #'s: 800894129249  
 No. Coolers: 1      Therm ID: IR6      Temp Adjustment Factor: -0.1  
 Cooler Temps (Initial/Adjusted): #1: (3.3/3.2)

**Cooler Security**      Y or N      Y or N  
 1. Custody Seals Present: ☒ ☐      3. COC Present: ☒ ☐  
 2. Custody Seals Intact: ☒ ☐      4. Smpl Dates/Time OK: ☒ ☐

**Cooler Temperature**      Y or N  
 1. Temp criteria achieved: ☒ ☐  
 2. Cooler temp verification: \_\_\_\_\_  
 3. Cooler media: \_\_\_\_\_ Ice (Bag)

<b>Quality Control Preservation</b>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>	<u>WTB</u>	<u>STB</u>
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		

**Sample Integrity - Documentation**      Y or N  
 1. Sample labels present on bottles: ☒ ☐  
 2. Container labeling complete: ☒ ☐  
 3. Sample container label / COC agree: ☒ ☐

**Sample Integrity - Condition**      Y or N  
 1. Sample recvd within HT: ☒ ☐  
 2. All containers accounted for: ☒ ☐  
 3. Condition of sample: \_\_\_\_\_ Intact

<b>Sample Integrity - Instructions</b>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments: The trip blank is listed on a separate chain-of-custody.

5.1  
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# Sample Receipt Log

Page 2 of 2

Job #: TC25606

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25606-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25606-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25606-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25606-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25606-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25606-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2

 5.1  
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**TC25606: Chain of Custody**
**Page 3 of 3**

# Appendix A Laboratory Data Package Cover Page

TC25606 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

**Check, if applicable:** This laboratory meets an exception under 30 TAC§25.6 and was last inspection by

☐ [X] TCEQ or ☐ \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

## QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodríguez



Laboratory Director

2/27/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		2/27/2013			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC25606			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS261, VE969			
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION				YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
R1	OI	<b>CHAIN-OF-CUSTODY (C-O-C):</b>							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	<b>Sample and quality control (QC) identification</b>							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	<b>Test reports</b>							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	<b>Surrogate recovery data</b>							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	<b>Test reports/summary forms for blank samples</b>							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	<b>Laboratory control samples (LCS):</b>							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?						X	4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	<b>Analytical duplicate data</b>							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	<b>Method quantitation limits (MQLs):</b>							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?						X	2
R10	OI	<b>Other problems/anomalies</b>							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/27/2013	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25606	
Reviewer	Name:	Anita Patel	Prep Batch Number(s):		GSS261, VE969	
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION	YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
S1	OI	<b>Initial calibration (ICAL)</b>				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	<b>Initial and continuing calibration verification (ICCV AND CCV) and continuing</b>				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	<b>Mass spectral tuning</b>				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	<b>Internal standards (IS)</b>				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	<b>Raw data (NELAC Section 5.5.10)</b>				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	<b>Dual column confirmation</b>				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	<b>Tentatively identified compounds (TICs):</b>				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	<b>Interference Check Sample (ICS) results</b>				
		Were percent recoveries within method QC limits?			X	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	<b>Method detection limit (MDL) studies</b>				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	<b>Proficiency test reports</b>				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	<b>Standards documentation</b>				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	<b>Compound/analyte identification procedures</b>				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	<b>Demonstration of analyst competency (DOC)</b>				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	<b>Verification/validation documentation for methods (NELAC Chapter 5)</b>				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	<b>Laboratory standard operating procedures (SOPs)</b>				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			GSS261, VE969
ER#	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

5.2  
5

## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



## Method Blank Summary

Page 1 of 1

Job Number: TC25606

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25606-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	111%	68-124%
2037-26-5	Toluene-D8	104%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

6.1.1

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## Blank Spike Summary

Page 1 of 1

Job Number: TC25606

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25606-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25606

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25606-1

CAS No.	Compound	TC25596-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U		25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U		25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U		25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U		75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.

## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25606

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25606-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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## Blank Spike Summary

Page 1 of 1

Job Number: TC25606

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25606-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128

\* = Outside of Control Limits.

## Matrix Spike Summary

Page 1 of 1

Job Number: TC25606

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25606-1

CAS No.	Compound	TC25606-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	1490 <sup>b</sup>		21.5	1520	249* <sup>a</sup>	68-139
74-85-1	Ethene	1.0 U		57.4	51.7	90	52-145
74-84-0	Ethane	104		43.3	137	75	68-131
74-98-6	Propane	1.5 U		60.6	42.6	70	69-131
75-28-5	Isobutane	1.5 U		72.5	52.8	73	72-131
106-97-8	Butane	1.5 U		76.6	58.4	76	66-128

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

Job Number: TC25606

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25606-1

CAS No.	Compound	TC25599-1 ug/l	DUP Q	DUP ug/l	Q	RPD	Limits
74-82-8	Methane	5.72		8.04		34	53
74-85-1	Ethene	1.0 U		ND		nc	27
74-84-0	Ethane	1.0 U		ND		nc	43
74-98-6	Propane	1.5 U		ND		nc	21
75-28-5	Isobutane	1.5 U		ND		nc	35
106-97-8	Butane	1.5 U		ND		nc	33

\* = Outside of Control Limits.

Lab #: 336577 Job #: 20733  
 Sample Name/Number: WW22-SIM-021513  
 Company: Oil Tracers, LLC  
 Date Sampled: 2/15/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: Fourth Quarter Well Sampling  
 Location: Parker County, TX  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.34			
Oxygen -----	0.10			
Nitrogen -----	75.78			
Carbon Dioxide -----	0.18			
Methane -----	22.05	-44.63	-156.1	
Ethane -----	0.548	-23.5		
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	0.0012			
N-pentane -----	nd			
Hexanes + -----	nd			

**Remarks:**

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.67

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/27/13

## Technical Report for

---

### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW24-Smi

Accutest Job Number: TC25607

Sampling Date: 02/15/13

---

### Report to:

EarthCon Consultants  
4800 Sugar Grove Suite 420  
Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.  
Test results relate only to samples analyzed.

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Accutest Laboratories

**Sample Summary**

EarthCon Consultants

Job No: TC25607

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter / WW24-Smi

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
TC25607-1	02/15/13	13:16	02/19/13	AQ	Water	WW24-SMI-021513



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25607

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/27/2013 11:50:22 AM

1 Sample was collected on 02/15/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.2 Deg C. The sample received an Accutest job number of TC25607. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> VE969
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

<b>Matrix</b> AQ	<b>Batch ID:</b> GSS261
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-IDUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

## Summary of Hits

Page 1 of 1

Job Number: TC25607  
Account: EarthCon Consultants  
Project: Quarterly Well Sampling, Parker County, Texas  
Collected: 02/15/13



Lab Sample ID	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25607-1	WW24-SMI-021513					
Methane		0.0434	0.00050	0.00030	mg/l	RSKSOP-147/175
Ethane		0.00318	0.0010	0.00050	mg/l	RSKSOP-147/175

Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b>	WW24-SMI-021513	<b>Date Sampled:</b>	02/15/13
<b>Lab Sample ID:</b>	TC25607-1	<b>Date Received:</b>	02/19/13
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021161.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		72-122%
17060-07-0	1,2-Dichloroethane-D4	110%		68-124%
2037-26-5	Toluene-D8	105%		80-119%
460-00-4	4-Bromofluorobenzene	105%		72-126%

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

Page 1 of 1

Client Sample ID:	WW24-SMI-021513		Date Sampled:	02/15/13
Lab Sample ID:	TC25607-1		Date Received:	02/19/13
Matrix:	AQ - Water		Percent Solids:	n/a
Method:	RSKSOP-147/175			
Project:	Quarterly Well Sampling, Parker County, Texas			

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005711.D	1	02/25/13	LT	n/a	n/a	GSS261
Run #2							

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.0434	0.00050	0.00030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.00318	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Misc. Forms

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5

## Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form



## CHAIN OF CUSTODY

PAGE \_\_\_ OF \_\_\_

10165 Harwin Dr, Ste 150 Houston, TX 77036  
TEL: 713-271-4700 FAX: 713-271-4770  
www.accutest.com

FED-EX Tracking #		Bottle Order Control #	
Accutest Quote #		Accutest Job # <b>TC25607</b>	
Client / Reporting Information		Project Information	
Company Name <b>EarthCon Consultants, Inc.</b>		Project Name <b>Fourth Quarterly Well Sampling, Parker County, Texas</b>	
Street Address <b>4800 Sugar Grove Blvd., Suite 390</b>		Street <b></b>	
City State Zip <b>Stefford TX 77477</b>		Billing Information (if different from Report to) Company Name <b></b>	
Project Contact <b>Gabriela Floreslovo</b>		Street Address <b></b>	
Phone # <b>281-201-3513</b>		City State Zip <b></b>	
Fax # <b></b>		Client Purchase Order # <b></b>	
Sampler(s) Name(s) <b>OB/SAR/M</b>		Project Manager <b></b>	
Phone # <b></b>		Allison: <b></b>	
Collection		Number of preserved bottles	
Field ID / Point of Collection <b>WWAY-SMT-021613</b>		Date <b>2/16/13</b>	
Time <b>1316</b>		Sampled By <b>JA</b>	
Matrix <b>DW</b>		# of bottles <b>6</b>	
HCl		NaOH	
ZnAcOH		HNO3	
PERDA		NONE	
DI Water		MESH	
TSP		Na2SO4	
ENCORE		OTHER	
BTEX 0200B		Butane, Ethane, Isobutane, Methane, Propane by RSK-175	
X		X	
LAB USE ONLY			
Turnaround Time (Business days)		Data Deliverable Information	
<input checked="" type="checkbox"/> Standard <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 4 Day RUSH <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day EMERGENCY Emergency & Rush T/A data available VIA LabLink		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULL1 (Level 3+4) <input type="checkbox"/> REDT1 (Level 3+4) <input type="checkbox"/> Commercial "C" <input checked="" type="checkbox"/> TRRP <input type="checkbox"/> EDD Format <input type="checkbox"/> Other Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC & Surrogate Summary	
Approved By (Accutest PM): (Date)		Comments/Special Instructions <b>Packed in 2 Coolers</b>	
Sample Custody must be documented below each time samples change possession, including courier delivery.			
Relinquished by Sampler: <b>1</b>		Received By: <b>1</b>	
Date Time: <b>2-18-13 1100</b>		Date Time: <b>2/19/13</b>	
Relinquished by Sampler: <b>3</b>		Received By: <b>3</b>	
Date Time:		Date Time:	
Relinquished by: <b>5</b>		Received By: <b>5</b>	
Date Time:		Date Time:	
Custody Seal #		<input type="checkbox"/> Intact <input type="checkbox"/> Not Intact	
Preserved where applicable		<input type="checkbox"/> On Ice <input type="checkbox"/> Cooler Temp.	

TC25607: Chain of Custody  
Page 1 of 3

Accutest Job Number: TC25607      Client: EARTHCON      Project: 4TH QTR SAMPLING  
 Date / Time Received: 2/19/2013      Delivery Method: FedEx      Airbill #'s: 800894129249  
 No. Coolers: 1      Therm ID: IR6      Temp Adjustment Factor: -0.1  
 Cooler Temps (Initial/Adjusted): #1: (3.3/3.2)

**Cooler Security**      Y or N      Y or N  
 1. Custody Seals Present: ☒ ☐      3. COC Present: ☒ ☐  
 2. Custody Seals Intact: ☒ ☐      4. Smpl Dates/Time OK: ☒ ☐

**Cooler Temperature**      Y or N  
 1. Temp criteria achieved: ☒ ☐  
 2. Cooler temp verification: \_\_\_\_\_  
 3. Cooler media: Ice (Bag)

**Quality Control Preservation**      Y or N      N/A      WTB      STB  
 1. Trip Blank present / cooler: ☒ ☐ ☐      ☒ ☐  
 2. Trip Blank listed on COC: ☐ ☒ ☐  
 3. Samples preserved properly: ☒ ☐ ☐  
 4. VOCs headspace free: ☒ ☐ ☐

**Sample Integrity - Documentation**      Y or N  
 1. Sample labels present on bottles: ☒ ☐  
 2. Container labeling complete: ☒ ☐  
 3. Sample container label / COC agree: ☒ ☐

**Sample Integrity - Condition**      Y or N  
 1. Sample recvd within HT: ☒ ☐  
 2. All containers accounted for: ☒ ☐  
 3. Condition of sample: Intact

**Sample Integrity - Instructions**      Y or N      N/A  
 1. Analysis requested is clear: ☒ ☐  
 2. Bottles received for unspecified tests: ☐ ☒  
 3. Sufficient volume recvd for analysis: ☒ ☐  
 4. Compositing instructions clear: ☐ ☐ ☒  
 5. Filtering instructions clear: ☐ ☐ ☒

Comments    The trip blank is listed on a separate chain-of-custody.

5.1  
5

## Sample Receipt Log

Page 2 of 2

Job #: TC25607

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25607-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25607-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25607-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25607-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25607-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25607-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2

 5.1  
5

**TC25607: Chain of Custody**
**Page 3 of 3**

# Appendix A Laboratory Data Package Cover Page

TC25607 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

**Check, if applicable:** This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

[ ] [X] TCEQ or [ ] \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

## QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodríguez



Laboratory Director

2/27/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast Quarterly Well Sampling, Parker County, Texas		LRC Date:		2/27/2013			
Project Name:				Laboratory Project Number:		TC25607			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS261, VE969			
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION				YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
R1	OI	<b>CHAIN-OF-CUSTODY (C-O-C):</b>							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	<b>Sample and quality control (QC) identification</b>							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	<b>Test reports</b>							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	<b>Surrogate recovery data</b>							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	<b>Test reports/summary forms for blank samples</b>							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	<b>Laboratory control samples (LCS):</b>							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?						X	4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	<b>Analytical duplicate data</b>							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	<b>Method quantitation limits (MQLs):</b>							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?						X	2
R10	OI	<b>Other problems/anomalies</b>							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/27/2013				
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25607				
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS261, VE969				
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION	YES	NO	NA <sup>3</sup>	NR <sup>4</sup>	ER <sup>5</sup>		
S1	OI	<b>Initial calibration (ICAL)</b>							
		Were response factors and/or relative response factors for each analyte within QC limits?	X						
		Were percent RSDs or correlation coefficient criteria met?	X						
		Was the number of standards recommended in the method used for all analytes?	X						
		Were all points generated between the lowest and highest standard used to calculate the curve?	X						
		Are ICAL data available for all instruments used?	X						
		Has the initial calibration curve been verified using an appropriate second source standard?	X						
S2	OI	<b>Initial and continuing calibration verification (ICCV AND CCV) and continuing</b>							
		Was the CCV analyzed at the method-required frequency?	X						
		Were percent differences for each analyte within the method-required QC limits?	X						
		Was the ICAL curve verified for each analyte?	X						
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X				
S3	O	<b>Mass spectral tuning</b>							
		Was the appropriate compound for the method used for tuning?	X						
		Were ion abundance data within the method-required QC limits?	X						
S4	O	<b>Internal standards (IS)</b>							
		Were IS area counts and retention times within the method-required QC limits?	X						
S5	OI	<b>Raw data (NELAC Section 5.5.10)</b>							
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X						
		Were data associated with manual integrations flagged on the raw data?	X						
S6	O	<b>Dual column confirmation</b>							
		Did dual column confirmation results meet the method-required QC?			X				
S7	O	<b>Tentatively identified compounds (TICs):</b>							
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X				
S8	I	<b>Interference Check Sample (ICS) results</b>							
		Were percent recoveries within method QC limits?			X				
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>							
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X				
S10	OI	<b>Method detection limit (MDL) studies</b>							
		Was a MDL study performed for each reported analyte?	X						
		Is the MDL either adjusted or supported by the analysis of DCSs?	X					5	
S11	OI	<b>Proficiency test reports</b>							
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X						
S12	OI	<b>Standards documentation</b>							
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X						
S13	OI	<b>Compound/analyte identification procedures</b>							
		Are the procedures for compound/analyte identification documented?	X						
S14	OI	<b>Demonstration of analyst competency (DOC)</b>							
		Was DOC conducted consistent with NELAC Chapter 5?	X						
		Is documentation of the analyst's competency up-to-date and on file?	X						
S15	OI	<b>Verification/validation documentation for methods (NELAC Chapter 5)</b>							
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X						
S16	OI	<b>Laboratory standard operating procedures (SOPs)</b>							
		Are laboratory SOPs current and on file for each method performed?							

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
ER#	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

5

## GC/MS Volatiles

---

## QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



## Method Blank Summary

Page 1 of 1

Job Number: TC25607

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25607-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	111%	68-124%
2037-26-5	Toluene-D8	104%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

## Blank Spike Summary

Page 1 of 1

Job Number: TC25607

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25607-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25607

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25607-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.

## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

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## Method Blank Summary

Page 1 of 1

Job Number: TC25607

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25607-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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## Blank Spike Summary

Page 1 of 1

Job Number: TC25607

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25607-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128

\* = Outside of Control Limits.

## Matrix Spike Summary

Page 1 of 1

Job Number: TC25607

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25607-1

CAS No.	Compound	TC25606-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	1490 <sup>b</sup>	21.5	1520	249* <sup>a</sup>	68-139
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145
74-84-0	Ethane	104	43.3	137	75	68-131
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131
75-28-5	Isobutane	1.5 U	72.5	52.8	73	72-131
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

Job Number: TC25607

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25607-1

CAS No.	Compound	TC25599-1 ug/l	DUP Q ug/l	Q	RPD	Limits
74-82-8	Methane	5.72	8.04		34	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	1.0 U	ND		nc	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33

\* = Outside of Control Limits.

Lab #: 336578 Job #: 20733  
 Sample Name/Number: WW24-SMI-021513  
 Company: Oil Tracers, LLC  
 Date Sampled: 2/15/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: Fourth Quarter Well Sampling  
 Location: Parker County, TX  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.53			
Oxygen -----	18.44			
Nitrogen -----	79.06			
Carbon Dioxide -----	0.31			
Methane -----	0.646			
Ethane -----	0.0176			
Ethylene -----	nd			
Propane -----	0.0004			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	nd			

## Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.71

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/27/13

## Technical Report for

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### EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW25-Mat

Accutest Job Number: TC25601

Sampling Date: 02/16/13

---

### Report to:

EarthCon Consultants  
4800 Sugar Grove Suite 420  
Stafford, TX 77477  
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;  
mcpatton@rangeresources.com; jhaines@earthcon.com  
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
Richard Rodriguez  
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (2012-059)

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Test results relate only to samples analyzed.

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## Sample Summary

EarthCon Consultants

Job No: TC25601

Quarterly Well Sampling, Parker County, Texas  
Project No: 4th Quarter / WW25-Mat

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC25601-1	02/16/13	15:15	02/19/13	AQ Water	WW25-MAT-021613



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** EarthCon Consultants

**Job No** TC25601

**Site:** Quarterly Well Sampling, Parker County, Texas

**Report Date** 2/27/2013 11:24:33 AM

1 Sample was collected on 02/16/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25601. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> AQ	<b>Batch ID:</b> VE969
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-IMS, TC25596-IMSD were used as the QC samples indicated.

### Volatiles by GC By Method RSKSOP-147/175

<b>Matrix</b> AQ	<b>Batch ID:</b> GSS261
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-IDUP, TC25606-IMS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

## Summary of Hits

Page 1 of 1

Job Number: TC25601

Account: EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Collected: 02/16/13



Lab Sample ID	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25601-1	WW25-MAT-021613					
Methane		0.259	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.0142	0.0010	0.00050	mg/l	RSKSOP-147/175

Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b>	WW25-MAT-021613		
<b>Lab Sample ID:</b>	TC25601-1	<b>Date Sampled:</b>	02/16/13
<b>Matrix:</b>	AQ - Water	<b>Date Received:</b>	02/19/13
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021155.D	1	02/22/13	AK	n/a	n/a	VE969
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		72-122%
17060-07-0	1,2-Dichloroethane-D4	112%		68-124%
2037-26-5	Toluene-D8	108%		80-119%
460-00-4	4-Bromofluorobenzene	107%		72-126%

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

Page 1 of 1

Client Sample ID: WW25-MAT-021613		Date Sampled: 02/16/13
Lab Sample ID: TC25601-1		Date Received: 02/19/13
Matrix: AQ - Water		Percent Solids: n/a
Method: RSKSOP-147/175		
Project: Quarterly Well Sampling, Parker County, Texas		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005696.D	1	02/25/13	LT	n/a	n/a	GSS261
Run #2	SS005697.D	10	02/25/13	LT	n/a	n/a	GSS261

## RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.259 <sup>a</sup>	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0142	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected      SDL - Sample Detection Limit  
MQL = Method Quantitation Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- LRC Form

10165 Harwin Dr, Ste 150 Houston, TX 77036  
TEL: 713-271-4700 FAX: 713-271-4770  
[www.aacutest.com](http://www.aacutest.com)

FED-EX Tracking #	Bottle Order Control #
Account Quote #	Account Job # TC25601

Client / Reporting Information		Project Information												Requested Analyses										Matrix Codes
Company Name <b>EarthCon Consultants, Inc.</b>		Project Name: <b>Fourth Quarterly Well Sampling, Parker County, Texas</b>																						DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED-Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WIP - Wipe FB-Field Blank
Street Address <b>4800 Sugar Grove Blvd., Suite 390</b>		Street				Billing Information (If different from Report to)																		
City <b>Dallas</b>	State <b>TX</b>	Zip <b>75217</b>	City		State		Company Name																	
Project Contact <b>Gabriela Floreslova</b>		E-mail		Project #		Street Address																		
Phone # <b>281-201-3513</b>		Fax #		Client Purchase Order #		City		State		Zip														
Sampler(s) Name(s) <b>J B / G H L R M</b>		Phone #		Project Manager		Attention:																		
Analysis Sample #	Field ID / Point of Collection	Collection				Number of preserved Bottles												LAB USE ONLY						
		Date	Time	Sampled By	Matrix	# of bottles	HCl	NHCl	Zn/HCl	HNO3	PtBrO4	PtBrO4	NONE	DI Water	MCHL	TSP	NaBH4		ENDORF	OTHER				
1	WW85-MAT-0216L3	8/16/13	1515	OZO	DW	6																		
<div style="text-align:center; font-size: 2em; opacity: 0.5;">ZTS</div>																								
Turnaround Time (Business days)		Approved by (Accoutant P#): / Date:				Data Deliverable Information												Comments / Special Instructions						
<input checked="" type="checkbox"/> Standard <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 4 Day RUSH <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day EMERGENCY Emergency & Rush T/A data available VIA Lablink						<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULT1 (Level 3+4) <input type="checkbox"/> REDT1 (Level 3+4) <input type="checkbox"/> Commercial "C"  Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC & Surrogate Summary												<input checked="" type="checkbox"/> TRRP <input type="checkbox"/> EDD Format <input type="checkbox"/> Other						
																		Packed in (2) Chelars						
Relinquished by:		Date Time: 2.19.13 1100		Received By: 1		Relinquished by:		Date Time: 2.19.13		Received By: 2		Relinquished by:		Date Time:		Received By: 4								
Relinquished by Sampler:		Date Time:		Received By: 3		Relinquished by:		Date Time:		Received By:		Relinquished by:		Date Time:		Received By:								
Relinquished by:		Date Time:		Received By: 5		Custody Seal #		<input type="checkbox"/> Intact <input type="checkbox"/> Not Intact		Preserved where applicable		On Ice		Cooler Temp.										

Sample Custody must be documented below each time samples change possession, including courier delivery.

5.1

**TC25601: Chain of Custody**  
**Page 1 of 3**

Accutest Job Number: TC25601      Client: EARTHCON      Project: 4TH QTR SAMPLING  
 Date / Time Received: 2/19/2013      Delivery Method: FedEx      Airbill #'s: 800894129249  
 No. Coolers: 1      Therm ID: IR6      Temp Adjustment Factor: -0.1  
 Cooler Temps (Initial/Adjusted): #1: (3.6/3.5)

<b>Cooler Security</b>		<b>Y or N</b>	<b>Y or N</b>	<b>Sample Integrity - Documentation</b>	<b>Y or N</b>
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smp Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Cooler Temperature</b>		<b>Y or N</b>	<b>Sample Integrity - Condition</b>		
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:			2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Cooler media:	Ice (Bag)		3. Condition of sample:	Intact	
<b>Quality Control Preservation</b>		<b>Y or N</b>	<b>N/A</b>	<b>Sample Integrity - Instructions</b>	<b>Y or N</b>
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. Analysis requested is clear:	<input checked="" type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. Bottles received for unspecified tests	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>		3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>
4. VOCs headspace free:	<input checked="" type="checkbox"/>	<input type="checkbox"/>		4. Compositing instructions clear:	<input type="checkbox"/>
				5. Filtering instructions clear:	<input type="checkbox"/>

Comments The trip blank is listed on a separate chain-of-custody.

**TC25601: Chain of Custody**  
**Page 2 of 3**

## Sample Receipt Log

Page 2 of 2

**Job #:** TC25601

**Date / Time Received:** 2/19/2013 9:30:00 AM

**Initials:** EC

**Client:** EARTHCON

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25601-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25601-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25601-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25601-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25601-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25601-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5

 5.1  
5

**TC25601: Chain of Custody**
**Page 3 of 3**

# Appendix A Laboratory Data Package Cover Page

TC25601 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

**Check, if applicable:** This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ \_\_\_\_\_ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

## QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

2/27/2013

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		2/27/2013			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC25601			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS281, VE989			
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION				YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
R1	OI	<b>CHAIN-OF-CUSTODY (C-O-C):</b>							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	<b>Sample and quality control (QC) Identification</b>							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	<b>Test reports</b>							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	<b>Surrogate recovery data</b>							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	<b>Test reports/summary forms for blank samples</b>							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	<b>Laboratory control samples (LCS):</b>							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?						X	4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	<b>Analytical duplicate data</b>							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	<b>Method quantitation limits (MQLs):</b>							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSSs included in the laboratory data package?						X	2
R10	OI	<b>Other problems/anomalies</b>							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		2/27/2013	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC25601	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS261, VE969	
# <sup>1</sup>	A <sup>2</sup>	DESCRIPTION	YES	NO	NA <sup>3</sup>	NR <sup>4</sup> ER # <sup>5</sup>
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	Initial and continuing calibration verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	Mass spectral tuning				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	Dual column confirmation				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	Tentatively identified compounds (TICs):				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	Interference Check Sample (ICS) results				
		Were percent recoveries within method QC limits?			X	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	Method detection limit (MDL) studies				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSSs?	X			5
S11	OI	Proficiency test reports				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	Standards documentation				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	Compound/analyte identification procedures				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	Demonstration of analyst competency (DOC)				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	Laboratory standard operating procedures (SOPs)				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			GSS261, VE969
ER#	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



## GC/MS Volatiles

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## QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25601

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25601-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	111%	68-124%
2037-26-5	Toluene-D8	104%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

## Blank Spike Summary

Page 1 of 1

Job Number: TC25601

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25601-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	108%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC25601

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25601-1

CAS No.	Compound	TC25596-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC25596-1	Limits
1868-53-7	Dibromofluoromethane	109%	107%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111%	68-124%
2037-26-5	Toluene-D8	109%	108%	106%	80-119%
460-00-4	4-Bromofluorobenzene	103%	103%	106%	72-126%

\* = Outside of Control Limits.

## GC Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

Job Number: TC25601

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25601-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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## Blank Spike Summary

Page 1 of 1

Job Number: TC25601

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25601-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128

\* = Outside of Control Limits.

## Matrix Spike Summary

Page 1 of 1

Job Number: TC25601

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25601-1

CAS No.	Compound	TC25606-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	1490 <sup>b</sup>	21.5	1520	249* <sup>a</sup>	68-139
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145
74-84-0	Ethane	104	43.3	137	75	68-131
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131
75-28-5	Isobutane	1.5 U	72.5	52.8	73	72-131
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

\* = Outside of Control Limits.

## Duplicate Summary

Page 1 of 1

Job Number: TC25601

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25601-1

CAS No.	Compound	TC25599-1 ug/l	DUP Q ug/l	Q	RPD	Limits
74-82-8	Methane	5.72	8.04		34	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	1.0 U	ND		nc	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33

\* = Outside of Control Limits.

Lab #: 336584 Job #: 20733  
 Sample Name/Number: WW25-MAT-021613  
 Company: Oil Tracers, LLC  
 Date Sampled: 2/16/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: Fourth Quarter Well Sampling  
 Location: Parker County, TX  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.46			
Oxygen -----	0.10			
Nitrogen -----	81.91			
Carbon Dioxide -----	0.15			
Methane -----	16.03	-45.11	-138.9	
Ethane -----	0.326	-27.3		
Ethylene -----	nd			
Propane -----	0.0147			
Propylene -----	nd			
Iso-butane -----	0.0053			
N-butane -----	0.0020			
Iso-pentane -----	0.0013			
N-pentane -----	nd			
Hexanes + -----	0.0010			

## Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.69

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.